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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT consult the notice entitled "update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of February 12, 1980.

Note that since August 1, 1979 certain fees for the processing of International Applications have been increased. The current schedule of fees is as follows:

Transmittal fee	$35.00
Search fee	300.00
Basic fee (first 30 pages)	190.00
Basic fee supplement (each sheet over 30)	3.50
Designation fee	45.00

SIDNEY A. DIAMOND,
Jan. 28, 1980. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 28,520, Re. S.N. 082,593, Filed Oct. 9, 1979, Cl. 137/596, SAFETY VALVE ASSEMBLY FOR CONTROLLING CLUTCH AND BRAKE IN POWER PRESS OR THE LIKE, Kenneth R. Mahorney, Owner of Record: *Ross Operating Valve Company, Detroit, Mich.,* Attorney or Agent: Cyrus G. Minkler, et al., Ex. Gp.: 341

3,259,217, Re. S.N. 130,250, Filed Mar. 14, 1980, Cl. 190/48, CARRYING CASE, Sidney Platt, Owner of Record: *Platt Luggage, Inc., Chicago, Ill.,* Attorney or Agent: William E. Anderson, et al., Ex. Gp.: 241

3,514,424, Re. S.N. 129,323, Filed Mar. 11, 1980, Cl. 260/37 SB, FLAME RETARDANT COMPOSITIONS, Maynard G. Noble, et al., Owner of Record: *General Electric Company, New York, N.Y.,* Attorney or Agent: John L. Young, et al., Ex. Gp.: 142

3,749,845, Re. S.N. 123,970, Filed Feb. 25, 1980, Cl. 179/15 AL, DIGITAL DATA COMMUNICATION SYSTEM, Alexander G. Fraser, Owner of Record: *Bell Telephone Laboratories, Murray Hill, N.J.,* Attorney or Agent: W. L. Keefauver, et al., Ex. Gp.: 235

3,817,039, Re. S.N. 122,943, Filed Feb. 20, 1980, Cl. 405/35, METHOD OF FILLING SUBTERRANEAN VOIDS WITH A PARTICULATE MATERIAL, John D. Stewart, et al., Owner of Record: *Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 354

3,891,229, Re. S.N. 135,602, Filed Mar. 31, 1980, Cl. 280/41 B, TRAVEL CHAIR, Edward J. Gaffney, Owner of Record: *Orthokinetics, Inc., Waukesha, Wis.,* Attorney or Agent: Henry C. Fuller, Jr., et al., Ex. Gp.: 316

3,892,819, Re. S.N. 124,055, Filed Feb. 25, 1980, Cl. 525/530, IMPACT RESISTANT VINYL ESTER RESIN AND PROCESS FOR MAKING SAME, Daniel J. Najvar, Owner of Record: *The Dow Chemical Company, Midland, Mich.,* Attorney or Agent: Richard G. Waterman, et al., Ex. Gp.: 143

3,904,785, Re. S.N. 135,318, Filed Mar. 31, 1980, Cl. 427/120, METHOD FOR INSULATING ELECTRIC ARMATURE WINDINGS, Frederick W. Baumann, Owner of Record: *General Electric Company, Schenectady, N.Y.,* Attorney or Agent: Vale P. Myles, et al., Ex. Gp.: 162

3,933,908, Re. S.N. 115,174, Filed Jan. 25, 1980, Cl. 260/553 E, SUBSTITUTED BENZOYL UREAS, Kobus Wellinga, et al., Owner of Record: *U.S. Philips Corporation, New York, N.Y.,* Attorney or Agent: Thomas A. Briody, et al., Ex. Gp.: 117

3,939,984, Re. S.N. 125,727, Filed Feb. 28, 1980, Cl. 209/536, PACKAGE INSPECTION AND HANDLING SYSTEM, Dean C. Butner, et al., Owner of Record: *R. J. Reynolds Tobacco Co., Winston-Salem, N.C.,* Attorney or Agent: Grover M. Myers, et al., Ex. Gp.: 311

3,989,072, Re. S.N. 129,277, Filed Mar. 25, 1980, Cl. 141/311 R, NOZZLE SEALING DEVICE AND ASSEMBLY, Fredrick L. Voelz, et al., Owner of Record: *Atlantic Richfield Company, Los Angeles, Calif.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 243

4,003,638, Re. S.N. 131,894, Filed Mar. 20, 1980, Cl. 350/293, RADIANT ENERGY COLLECTION, Roland Winston, Owner of Record: *The University of Chicago, Chicago, Ill.,* Attorney or Agent: William E. Dominick, et al., Ex. Gp.: 257

4,022,513, Re. S.N. 119,381, Filed Feb. 7, 1980, Cl. 303/93, SELECTIVE DECELERATION BRAKE CONTROL SYSTEM, Edgar A. Hirzel, et al., Owner of Record: *Crane Company, New York, N.Y.,* Attorney or Agent: James P. Hume, et al., Ex. Gp.: 315

4,057,260, Re. S.N. 129,168, Filed Mar. 7, 1980, Cl. 279/77, DEVICE FOR CONNECTING THE BITS WITH THE CUTTING HEAD OF A DRIFT ADVANCING MACHINE OR THE LIKE, Siefried Sigott, Owner of Record: *Vereinigte Osterreichische Eisen- und Stahlwerke Alpine Montan-Aktiengesellschaft, Vienna, Austria,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 324

4,071,893, Re. S.N. 125,879, Filed Feb. 29, 1980, Cl. 364/427, FLYING METHOD AND SYSTEM USING TOTAL ENERGY (POWER) FOR AN AIRCRAFT, Jean-Luc Sicre, Owner of Record: *Societe Francaise D'Equipments Pour la Navigation Aerienne, Velizy-Villacoublay, France,* Attorney or Agent: John F. Scully, et al., Ex. Gp.: 236

4,072,859, Re. S.N. 116,181, Filed Jan. 28, 1980, Cl. 250/214 R, WAND TURN-ON CONTROL, Lynn D. McWaters, Owner of Record: *Recognition Equipment Inc., Irving, Tex.,* Attorney or Agent: John E. Vandigriff, Ex. Gp.: 252

4,076,012, Re. S.N. 124,665, Filed Feb. 26, 1980, Cl. 126/164, FIREPLACE GRATE, John G. Meeker, Owner of Record: *Inventor,* Attorney or Agent: Everett J. Schroeder, et al., Ex. Gp.: 345

4,076,428, Re. S.N. 123,508, Filed Feb. 22, 1980, Cl. 401/265, PEN POINTS FOR WRITING INSTRUMENTS, Nobuyuki Otake, et al., Owner of Record: *Tokyo Boshi Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Warren A. Sklar, et al., Ex. Gp.: 337

4,080,063, Re. S.N. 128,766, Filed Mar. 10, 1980, Cl. 355/50, COPIER DOCUMENT HANDLING SYSTEM, Denis J. Stemmle, Owner of Record: *Xerox Corporation, Stamford, Conn.,* Attorney or Agent: Harvey M. Brownrout, et al., Ex. Gp.: 211

4,081,556, Re. S.N. 133,450, Filed Mar. 24, 1980, Cl. 426/2, PRODUCT FOR FEEDING BEES, Jean-Louis Louveaux, et al., Owner of Record: *Institut National de la Recherche Agronomique, Paris, France,* Attorney or Agent: Roberts B. Larson, et al., Ex. Gp.: 172

4,093,147, Re. S.N. 109,004, Filed Dec. 31, 1979, Cl. 242/159, FLAT NYLON 66 YARN HAVING A SOFT HAND, AND PROCESS FOR MAKING SAME, James E. Bromley, et al., Owner of Record: *Monsanto Company, St. Louis, Mo.,* Attorney or Agent: Kelly O. Corley, et al., Ex. Gp.: 242

4,097,677, Re. S.N. 127,352, Filed Mar. 5, 1980, Cl. 560/220, UNSATURATED ESTERS OF GLYCOL MONODICYCLOPENTENYL ETHERS, William D. Emmons, et al., Owner of Record: *Rohm and Haas Company, Philadelphia, Pa.,* Attorney or Agent: Lester E. Johnson, et al., Ex. Gp.: 126

4,103,421, Re. S.N. 127,480, Filed Mar. 5, 1980, Cl. 30/162, BLADE-HOLDING CUTTING DEVICE, Michel Quenot, Owner of Record: *Stanley-Mabo S.A., Besancon, France,* Attorney or Agent: John M. Prutzman, et al., Ex. Gp.: 323

4,113,389, Re. S.N. 115,919, Filed Jan. 28, 1980, Cl. 356/154, OPTICAL MEASUREMENT SYSTEM, Morton Kaye, Owner of Record: *Inventor,* Attorney or Agent: S. C. Yuter, et al., Ex. Gp.: 257

4,116,699, Re. S.N. 134,758, Filed Mar. 28, 1980, Cl. 106/3, ALUMINUM POLISHING COMPOSITIONS, Terence R. Rooney, Owner of Record: *Albright & Wilson Limited, West Midland, England,* Attorney or Agent: Stephen H. Frishauf, et al., Ex. Gp.: 142

4,137,242, Re. S.N. 121,604, Filed Feb. 14, 1980, Cl. 260/348.25, PROCESS FOR THE PREPARATION OF PROPYLENE OXIDE, Gunter Prescher, et al., Owner of Record: *Bayer Aktiengesellschaft, Leverkusen; Deutsche Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt am Main; both of Federal Republic of Germany,* Attorney or Agent: Arnold Sprung, et al., Ex. Gp.: 121

4,137,682, Re. S.N. 114,128, Filed Jan. 21, 1980, Cl. 52/503, FLOOR SYSTEM FOR GRAIN BIN, Mark A. Trumper, Owner of Record: *Grain Systems, Inc., Assumption, Ill.,* Attorney or Agent: Philip B. Polster, et al., Ex. Gp.: 354

4,140,928, Re. S.N. 119,659, Filed Feb. 8, 1980, Cl. 307/273, MONOSTABLE MULTIVIBRATOR, Yukihiko Miyamoto, Owner of Record: *Trio Kabushiki Kaisha, Tokyo, Japan,* Attorney or Agent: Melvin R. Jenney, et al., Ex. Gp.: 254

4,143,561, Re. S.N. 062,852, Filed Aug. 1, 1979, Cl. 74/730, HYDROKINETIC TORQUE CONVERTER WITH LOCK-UP CLUTCH AND INTERNAL VIBRATION DAMPING, Barry John Melhorn, Owner of Record: *Ford Motor Company, Dearborn, Mich.,* Attorney or Agent: Donald J. Harrington, et al., Ex. Gp.: 352

4,149,630, Re. S.N. 135,368, Filed Mar. 31, 1980, Cl. 206/45.24, COLLAPSIBLE EASEL SUPPORT, Felix Transport, Owner of Record: *Inventor,* Attorney or Agent: James David Jacobs, Ex. Gp.: 241

4,160,509, Re. S.N. 103,336, Filed Dec. 13, 1979, Cl. 414/607, FREIGHT CAR DOOR OPENER, Ralph V. Switzer, Owner of Record: *The Aldon Company, Waukegan, Ill.,* Attorney or Agent: Edward C. Threedy, Ex. Gp.: 314

4,167,724, Re. S.N. 131,902, Filed Mar. 20, 1980, Cl. 337/408, THERMAL SWITCHES, James R. McCaughna, Owner of Record: *Inventor,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 212

4,176,902, Re. S.N. 135,331, Filed Mar. 31, 1980, Cl. 339/147 P, METHOD FOR FUSING MALE PLUG AT END OF POWER LINE CORD, Elliot Bernstein, Owner of Record: *Bel Fuse, Incorporated, Jersey City, N.J.,* Attorney or Agent: Sidney G. Faber, et al., Ex. Gp.: 322

PATENT NOTICES

Certificates of Correction for the Week of June 10, 1980

Re. 29,967	4,173,091	4,184,538	4,190,534
Re. 30,218	4,173,396	4,184,678	4,190,606
D. 254,210	4,173,476	4,184,861	4,190,664
3,808,823	4,173,896	4,184,962	4,190,727
3,857,934	4,174,623	4,184,963	4,190,737
3,930,709	4,175,000	4,184,966	4,190,770
3,967,616	4,175,107	4,184,987	4,190,990
3,975,362	4,175,160	4,185,029	4,191,056
3,981,851	4,175,296	4,185,423	4,191,209
3,993,588	4,175,981	4,185,512	4,191,221
4,001,403	4,175,982	4,185,729	4,191,293
4,005,046	4,176,367	4,185,803	4,191,310
4,038,562	4,176,452	4,186,000	4,191,453
4,041,558	4,177,106	4,186,366	4,191,472
4,058,554	4,177,183	4,186,501	4,191,517
4,076,166	4,177,451	4,186,609	4,191,568
4,084,976	4,177,572	4,186,614	4,191,641
4,089,692	4,177,579	4,186,723	4,191,769
4,098,556	4,177,911	4,187,179	4,191,802
4,098,652	4,178,221	4,187,221	4,191,892
4,101,344	4,179,326	4,187,248	4,191,940
4,107,058	4,179,350	4,187,402	4,191,987
4,107,487	4,179,720	4,187,471	4,192,018
4,110,625	4,179,936	4,187,688	4,192,070
4,113,771	4,180,008	4,187,714	4,192,191
4,118,396	4,180,473	4,187,854	4,192,285
4,120,300	4,180,504	4,188,106	4,192,323
4,121,913	4,180,547	4,188,134	4,192,381
4,128,287	4,180,570	4,188,268	4,192,464
4,140,516	4,180,596	4,188,318	4,192,472
4,141,792	4,180,716	4,188,345	4,192,562
4,144,583	4,180,890	4,188,371	4,192,685
4,157,278	4,180,949	4,188,467	4,192,751
4,157,313	4,180,957	4,188,480	4,192,787
4,157,640	4,180,980	4,188,662	4,192,859
4,159,176	4,181,214	4,188,668	4,193,026
4,160,131	4,181,375	4,188,726	4,193,040
4,160,987	4,181,659	4,189,103	4,193,049
4,161,532	4,181,749	4,189,302	4,193,138
4,161,606	4,181,811	4,189,386	4,193,235
4,161,777	4,182,163	4,189,411	4,193,245
4,161,855	4,182,230	4,189,454	4,194,047
4,162,392	4,182,794	4,189,457	4,194,879
4,163,757	4,183,379	4,189,510	4,194,986
4,164,504	4,183,427	4,189,539	4,195,430
4,165,669	4,183,631	4,189,605	4,195,606
4,166,316	4,183,713	4,189,620	4,195,707
4,167,617	4,183,725	4,189,676	4,195,750
4,168,857	4,183,791	4,189,724	4,195,831
4,169,092	4,183,864	4,189,767	4,195,955
4,169,732	4,183,910	4,189,782	4,196,017
4,169,829	4,184,051	4,189,938	4,197,292
4,170,412	4,184,151	4,190,056	4,197,618
4,170,689	4,184,229	4,190,264	4,198,079
4,171,848	4,184,308	4,190,353	4,198,252
4,172,583	4,184,376	4,190,512	

Disclaimers

3,348,866.—*Herbert Etz*, Wuppertal-Langerfeld, Germany. APPARATUS FOR APPLYING TAMPON REMOVAL CORDS. Patent dated Oct. 24, 1967. Disclaimer filed, Aug. 27, 1979, by the assignee, *Dr. Carl Hahn, G.m.b.H.*

Hereby enters this disclaimer to claims 1–20 inclusive of said patent.

3,477,102.—*Herbert Etz*, Wuppertal-Langerfeld, Germany. METHOD OF MANUFACTURING TAMPONS. Patent dated Nov. 11, 1969. Disclaimer filed Aug. 27, 1979, by the assignee, *Dr. Carl Hahn, G.m.b.H.*

Hereby enters this disclaimer to claims 1–2 inclusive of said patent.

3,762,925.—*Fritz Nittel*, Cologne Stammhein, Germany, *Robert Joseph Pollet*, Vremde; and *Raphael K. Van Poucke*, Berchem, Belgium. METHOD OF INCORPORATING PHOTOGRAPHIC ADJUVANTS INTO HYDROPHILIC COLLOIDS. Patent dated Oct. 2, 1973. Disclaimer filed Apr. 3, 1980, by the assignee, *Agfa-Gevaert, N.V.*

Hereby enters this disclaimer to all claims of said patent.

3,818,912.—*Herbert Etz*, Wuppertal-Langerfeld, Germany. CATAMENIAL TAMPON. Patent dated June 25, 1974. Disclaimer filed Aug. 27, 1979, by the assignee, *Dr. Carl Hahn, G.m.b.H.*

Hereby enters this disclaimer to claim 1 of said patent.

4,063,149.—*Brian Crowle*, Ashford, England. CURRENT REGULATING CIRCUITS. Patent dated Dec. 13, 1977. Disclaimer filed Apr. 10, 1980, by the assignee, *RCA Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 7, 8, 9 and 11 of said patent.

4,105,862.—*Rudolph H. Hochn*, Queens, N.Y. OUTLET BOX HAVING SCREW MOUNTING MEANS. Patent dated Aug. 8, 1978. Disclaimer filed Apr. 7, 1980, by the assignee, *Slater Electric Inc.*

The term of this patent subsequent to May 11, 1993, has been disclaimed.

4,188,854.—*Rudolph H. Hochn*, Queens, N.Y. SCREW MOUNTING MEANS. Patent dated Feb. 19, 1980. Disclaimer filed Apr. 7, 1980, by the assignee, *Slater Electric Inc.*

The term of this patent subsequent to May 11, 1993, has been disclaimed.

Disclaimers and Dedications

3,975,192.—*Harold H. Simpson*, Fraser, Mich. DENTAL ALLOY AND AMALGAM. Patent dated Aug. 17, 1976. Disclaimer and Dedication filed, Mar. 27, 1980, by the assignee, *Sybron Corporation.*

Hereby disclaims and dedicates to the Public all claims of said patent.

3,565,957.—*Stanley B. Mirviss, Stamford, Conn.*, and *Donald J. Martin*, Irvington, and *Edward D. Weil*, Yonkers, N.Y. HYDROGENATION OF NITRILOTRIACETONITRILE. Patent dated Feb. 23, 1971. Disclaimer and dedication filed Mar. 3, 1980, by the assignee, *Stauffer Chemical Company.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents, final decisions having been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,910,349, J. R. Brown, C. B. Cochran, J. W. Montgomery, APPARATUS AND METHOD FOR CEMENTING WELL LINERS, Interference No. 99,681, decided April 25, 1980, claims 1, 6, 7, 9 and 10.

Patent No. 3,954,740, W. Fringeli, BIS-S-TRIAZINYLAMINOSTILBENE-2, 2-DISULPHONIC ACIDS, THEIR MANUFACTURE AND THEIR USE AS OPTICAL BRIGHTENERS, Interference No. 100,055, decided March 5, 1980, claims 1, 2, 3 and 5.

Patent No. 3,955,721, M. D. La Bate, EXPENDABLE TUNDISH LINER, Interference No. 99,836, decided December 6, 1979, claims 1, 2 and 6.

Patent No. 3,759,196, P. W. Spaite, REFUSE DISPOSAL AND HEAT RECOVERY IN STEAM BOILERS, Interference No. 98,769, decided December 17, 1979, claim 3.

Patent No. 4,033,961, C. F. Schwender, B. R. Sunday, PYRIDO (2-1-B) QUINAZOLIN-ONES AND THEIR METHODS OF PREPARATION, Interference No. 100,006, decided March 11, 1980, claim 7.

Patent No. 4,060,688, R. R. Chauvette, CEPHALOSPORIN INTERMEDIATES, Interference No. 100,023, decided March 31, 1980, claims 1–5.

Patent No. 4,063,262, N. Inoue, SHUTTER BLADE ASSEMBLY FOR FOCAL PLANE SHUTTERS, Interference No. 100,224, decided March 28, 1980, claims 1 and 2.

Patent No. 4,068,976, E. J. Friedline, CUTTING INSERT CONFIGURATION, Interference No. 100,280, decided March 7, 1980, claims 1–5.

NANNIE B. HENRY,
Deputy Clerk, Board of Patent Interferences.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

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Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a nondisclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half Street, SW., Washington, D.C. 20324

Patent application 6–065,472. Repressed Amplifier for Mode Locked Oscillator. Filed Aug. 10, 1979.

Patent application 6–065,678. Mode Filter Apparatus. Filed Aug. 10, 1979.

Patent application 6–065,679. Method and Apparatus for the Analysis of Semi-Conductors. Filed Aug. 10, 1979.

Patent application 6–066,358. Tail Carriage of Stores. Filed Aug. 14, 1979.

Patent application 6–068,817. Aimpoint Selection Processor. Filed Aug. 22, 1979.

Patent application 6–070,383. Parallel Multi-Electrode Spark Gap Switch. Filed Aug. 28, 1979.

Patent application 6–073,478. Towplate System. Filed Sept. 7, 1979.

Patent application 6–073,479. Impulse Generator Apparatus. Filed Sept. 7, 1979.

Patent application 6–073,584. Subarray Pattern Control and Null Steering for Subarray Antenna Systems. Filed Sept. 7, 1979.

Patent application 6–076,893. Digital Position Transducer Apparatus. Filed Sept. 19, 1979.

Patent application 6–077,058. Power Supply Sequencing Apparatus. Filed Sept. 19, 1979.

Patent 4,170,775. Communication System Beamport Canceller. Filed Dec. 30, 1977. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,170,901. Sorption Tube Atmospheric Sampling System. Filed June 15, 1978. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,171,859. Sliding Air Seal for Electronic Assemblies. Filed Feb. 23, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,171,915. Laser Interferometer Probe. Filed Oct. 7, 1977. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,173,122. Intermittent Burning Jet Engine. Filed Feb. 9, 1978. Patented Nov. 6, 1979. Not available NTIS.

Patent 4,175,835. Floating Head Laser Mirror Assembly. Filed July 20, 1978. Patented Nov. 27, 1979. Not available NTIS.

Patent 4,177,227. Low Shear Mixing Process for the Manufacture of Solid Propellants. Filed Sept. 10, 1975, patented Dec. 4, 1979. Not available NTIS.

Patent 4,177,230. Process for Producing Reaction Sintered Silicon Nitride of Increased Density. Filed June 2, 1978. Patented Dec. 4, 1979. Not available NTIS.

Patent 4,180,329. Single Blade Proximity Probe. Filed Mar. 23, 1978. Patented Dec. 25, 1979. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Program Agreements & Patent Branch, Admin. Services Division, Federal Building, Science & Education Admin., Hyattsville, Md. 20782

Patent 4,170,670. Formulations for Imparting Flame Retardance to Cellulosic Fabrics via Transfer Techniques. Filed Dec. 30, 1977. Patented Oct. 9, 1979. Not available NTIS.

Patent 4,171,448. Quaternary Phosphonium Salts Bearing Carbamate Groups. Filed Nov. 29, 1978. Patented Oct. 16, 1979. Not available NTIS.

Patent 4,172,841. Antibacterial Textile Finishes Utilizing Zinc Acetate and Hydrogen Peroxide. Filed Aug. 17, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,174,300. Preparation of Highly Active Copper-Silica Catalysts. Filed Jan. 30, 1978. Patented Nov. 13, 1979. Not available NTIS.

Patent 4,180,627. Process for in vivo Transfer of Cell-Mediated Immunity in Mammals with Alcoholic Precipitates of Bovine Transfer Factor. Filed Aug. 17, 1978. Patented Dec. 25, 1979. Not available NTIS.

Patent 4,182,673. Dust Precutter and Method. Filed Aug. 31, 1978. Patented Jan. 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C Streets NW., Washington, D.C. 20240

Patent application 6–064,608. Removal of Sodium Sulfate from a Sulfate-Containing Sodium Chloride Solution in a Process for Separating Zirconium and Hafnium. Filed Aug. 7, 1979.

Patent application 6–069,677. Separation of Zirconium from Hafnium by Solvent Extraction. Filed Aug. 27, 1979.

Patent 4,167,555. Extraction of Tungsten from Ores. Filed Dec. 15, 1978. Patented Sept. 11, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY
Assistant Chief for Patents, Office of Naval Research, Code 302, Arlington, Va. 22217

Patent application 6–033,651. Payload Release Mechanism. Filed Apr. 26, 1979.

Patent application 6–034,886. Force Sensing System. Filed Apr. 5, 1979.

Patent application 6–053,465. Position and Restraint System for Aircrewman. Filed June 29, 1979.

Patent application 6–056,590. Compensating Structure for Circulation Control Rotor Pneumatic Valve. Filed July 11, 1979.

Patent application 6–067,072. Constant Beamwidth Transducer. Filed Aug. 15, 1979.

Patent application 6–069,697. Improved Performance of Metal Dihalide Dissociation Lasers by Changed Buffer Gas Composition. Filed Aug. 27, 1979.

Patent application 6–070,294. Raster Scan Generator for Plan View Display. Filed Aug. 28, 1979.

Patent application 6–071,142. Thermal Target and Weapon Fire Simulator for Thermal Sights. Filed Aug. 30, 1979.

Patent application 6–073,359. Method of Adding Alloy Additions in Melting Aluminum Base Alloys for Ingot Casting. Filed Sept. 7, 1979.

Patent application 6–074,448. New Method for Expitaxial Growth of GaAs Films and Devices Configuration Independent of GaAs Substrates. Filed Sept. 11, 1979.

Patent application 6–086,859. Electrical Fire Fighting Simulator. Filed Oct. 22, 1979.

Patent application 6–088,191. Anastigmatic Three-Dimensional Bootlace Lens. Filed Oct. 25, 1979.

Patent application 6–089,058. Flexi-Bend Corrugated Waveguide. Filed Oct. 29, 1979.

Patent application 6–092,826. Focusing Anode for Cold-Cathode Electron Gun. Filed Nov. 9, 1979.

Patent application 6–094,125. Laser Having Simultaneous Ultraviolet and Visible Wavelengths. Filed Nov. 14, 1979.

Patent application 813,038. Digital to Analog Interface for Simultaneous Analog Outputs. Filed July 5, 1977.

Patent 4,156,648. Flotation Device with Pretreatment. Filed May 30, 1978. Patented May 29, 1979. Not available NTIS.

Patent 4,161,722. Signal Decoding System. Filed Nov. 30, 1967. Patented July 17, 1979. Not available NTIS.

Patent 4,163,773. Self-Clinkering Burning Rate Modifier for Solid Propellant NF3–F2 Gas Generators for Chemical HF–DF Lasers. Filed Dec. 18, 1978. Patented Aug. 7, 1979. Not available NTIS.

Patent 4,166,112. Mosquito Larvae control Using a Bacterial Larvicide. Filed Mar. 20, 1978. Patented Aug. 28, 1979. Not available NTIS.

Patent 4,166,782. Method of Anodically Leveling Semiconductor Layers. Filed Nov. 6, 1978. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,166,884. Position Insensitive Battery. Filed Sept. 15, 1978. Patented Sept. 4, 1979. Not available NTIS.

Patent 4,168,362. Non-Migrating Ferrocene Containing Solid Propellant Binder. Filed Dec. 14, 1977. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,475. Pulsed Electron Impact Dissociation Cyclic Laser. Filed Feb. 2, 1978. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,482. Combination Acoustic Filter Plate and Liquid Lens. Filed July 14, 1978. Patented Sept. 18, 1979. Not available NTIS.

Patent 4,168,729. Underwater Self-Gripping Pile Cutting Device. Filed Nov. 16, 1977. Patented Sept. 25, 1979. Not available NTIS.

Patent 4,172,088. Bis(2-Fluoro-2,2-Dinitroethyl) Thionocarbonate and a Method of Preparation. Filed June 22, 1978. Patented Oct. 23, 1979. Not available NTIS.

Patent 4,172,775. Photochemical Separation of Metals in Solution by Precipitation Following Reduction or Oxidation. Filed Feb. 9, 1978. Patented Oct. 30, 1979. Not available NTIS.

Patent 4,174,471. Explosively Actuated Opening Switch. Filed Mar. 27, 1978. Patented Nov. 13, 1979. Not available NTIS.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, NASA Code GP–2, Washington, D.C. 20546

Patent application 945,436. Geological Assessment Probe. Filed Sept. 25, 1978.

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The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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State	*Name of Library*	*Telephone Contact*
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California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1458
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
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	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF MAY 17, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—R. FRIEDMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy: Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-18-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	5-3-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	1-25-80
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	6-1-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	12-11-78
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	1-31-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	5-1-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-2-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-3-78
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	4-25-78
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-2-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	4-2-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-23-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-16-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	2-21-79

Expiration of patents: The patents within the range of numbers indicated below expire during May 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,088,114 to 3,091,767, inclusive
Plant Patents ..... Numbers 2,268 to 2,261, inclusive

REISSUES

JUNE 10, 1980

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,299

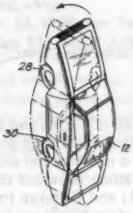
GYROSCOPE TOY

Donald Greenwood, Akron, Iowa, assignor to Ideal Toy Corporation, Hollis, N.Y.

Original No. 3,650,067, dated Mar. 21, 1972, Ser. No. 879,157, Nov. 24, 1969. Continuation of Ser. No. 549,284, Feb. 12, 1975, abandoned. Application for reissue Jun. 14, 1976, Ser. No. 696,158

Int. Cl.[2] A63H *17/00*

U.S. Cl. 46—206 **13 Claims**



11. A four-wheeled friction driven toy having a rotatable flywheel and front and rear pairs of wheels comprising a main body housing, and gearing means having a plurality of gears connected to said rear pair of wheels constituting drive wheels, said rotatable flywheel being disposed on a common shaft with one of said gears and providing gyroscopic action for enhancing the stability and balance of said toy, and said rotatable flywheel being disposed horizontally between said two pair of wheels of said toy; said rotatable flywheel is disposed adjacent the bottom of said toy in proximity to the toy's center of gravity, the bottom of said toy having a viewing window for observing said rotatable flywheel, and said flywheel being provided with a plurality of differently colored spirals.

Re. 30,300

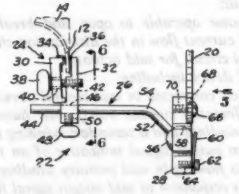
ACOUSTICAL REFLECTOR FOR WIND INSTRUMENTS

Thomas L. Ploeger, 38457 James Dr., Mt. Clemens, Mich. 48043

Original No. 4,012,983, dated Mar. 22, 1977, Ser. No. 611,700, Sep. 9, 1975. Application for reissue Nov. 2, 1978, Ser. No. 957,037

Int. Cl.[2] G10D *9/06*

U.S. Cl. 84—400 **14 Claims**



1. In an acoustical reflector of the type having a panel with an acoustically reflective surface and bracket means on said panel including a clamp adapted to be mounted on the rim of the bell of a wind instrument for supporting said panel generally in front of the bell, improved structure wherein said bracket means comprises,

a rod connected with said panel by means including an articulable joint,

said clamp having means forming a socket which supports a portion of said rod,

said socket being so oriented that when said clamp is mounted on the rim of the bell of an instrument with which said reflector is adapted to be used the axis of said rod is generally parallel to the axis of the instrument bell,

said rod portion being axially movable relative to said socket through a distance sufficient to facilitate locating said panel axially clear of the bell of the instrument when said panel is positioned in axial alignment with the bell,

said rod portion being rotatable relative to said socket for swinging said panel about said rod axis when said panel is so located and positioned,

and means effective to secure said rod against axial and rotatable movement relative to said socket.

Re. 30,301

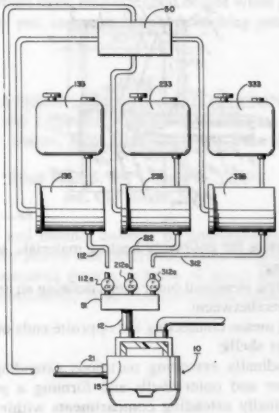
BEVERAGE MIXING AND DISPENSING APPARATUS

Alfred E. Zygiel, deceased, late of Dallas, Tex. (by Mary E. Zygiel, executrix), assignor to The Cornelius Company, Anoka, Minn.

Original No. 3,779,261, dated Dec. 18, 1973, Ser. No. 233,513, Mar. 10, 1972. Application for reissue Dec. 15, 1975, Ser. No. 640,711

Int. Cl.[2] G05D *11/02*

U.S. Cl. 137—564.5 **1 Claim**



[1. Apparatus for mixing fluids comprising

a. first valve means for injecting a first fluid into a mixing chamber adapted for directed said fluid in a downwardly directed stream,

b. second valve means for injecting a second fluid into said stream,

c. a reservoir for said second fluid,

d. a metering chamber in fluid communication with said reservoir,

e. check valve means permitting fluid flow from said metering chamber to said reservoir,

f. by-pass means for conducting said first fluid from said mixing chamber to said metering chamber,

g. diaphragm means within said metering chamber for separating said first fluid and second fluid, and

h. means for conducting said second fluid from said metering chamber to said second valve means.]

Re. 30,302

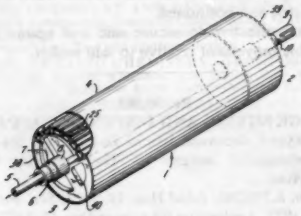
HOT OIL DRUM

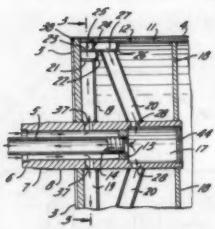
Peter Stanislaw, RD #1 9476, Stockholm, N.J. 07460

Original No. 3,903,961, dated Sep. 9, 1975, Ser. No. 413,794, Nov. 8, 1973. Application for reissue Oct. 16, 1978, Ser. No. 951,585

Int. Cl.² F28F *13/06*

U.S. Cl. 165—89 **33 Claims**





[1. Apparatus for uniformly heating materials, said apparatus comprising:

(a) concentric inner and outer shells defining an annular flow space therebetween;

(b) closing means connecting the opposite ends of said inner and outer shells;

(c) longitudinally extending partitions extending between said inner and outer shells and forming a plurality of longitudinally extending compartments within said flow space;

(d) longitudinally extending baffles extending between said inner and outer shells for a portion of the length of said compartments, so that an approximately U-shaped flow path is formed within each of said compartments, said approximately U-shaped flow paths each including only two legs consisting of an entrance leg and an exit leg, said legs being circumferentially arranged with respect to each other;

(e) feed means for supplying a heat-transfer fluid to said entrance leg of each of said approximately U-shaped flow paths;

(f) return means for withdrawing a heat-transfer fluid from said exit leg of each of said approximately U-shaped flow paths.]

Re. 30,303

NOVEL (UV ABSORBING COMPOUNDS AND) PHOTOGRAPHIC ELEMENTS CONTAINING UV ABSORBING COMPOUNDS

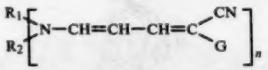
Wayne W. Weber, II, and Donald W. Heseltine, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 4,045,229, dated Aug. 30, 1977, Ser. No. 641,788, Dec. 18, 1975. Continuation-in-part of Ser. No. 506,913, Sep. 17, 1974, abandoned. Application for reissue Apr. 14, 1978, Ser. No. 896,123

Int. Cl.² G03C *1/84*

U.S. Cl. 430—512 **19 Claims**

3. A photographic element comprising a support having thereon at least one radiation sensitive silver halide emulsion layer and an ultraviolet filter layer comprising a binder and at least one compound having the formula:



wherein n is 1 or 2, when n is 1, R_1 and R_2 are independently chosen to represent hydrogen, an alkyl group of 1 to 10 carbon atoms, an aryl group of 6 to 10 carbon atoms, or a cyclic alkyl group of 5 to 6 carbon atoms provided that R_1 and R_2 cannot both be hydrogen, or R_1 and R_2 taken together represent the atoms necessary to complete a cyclic amino group and when n is 2 at least one of R_1 and R_2 is alkylene or arylene, and G represents an electron withdrawing group.

Re. 30,304

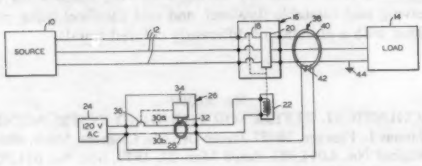
GROUND FAULT PROTECTION SYSTEM

Gregory C. Eckart, Southington, Conn., assignor to General Electric Company, New York, N.Y.

Original No. 4,044,395, dated Aug. 23, 1977, Ser. No. 710,391, Aug. 2, 1976. Application for reissue Jul. 13, 1978, Ser. No. 924,255

Int. Cl.² H02H *3/28*

U.S. Cl. 361—44 **10 Claims**



10. A protection system for an electrical power distribution circuit, said system comprising, in combination:

A. a circuit breaker having contacts connected in the distribution circuit;

B. an actuator operable to open said breaker contacts and interrupt current flow in the distribution circuit;

C. a control circuit for said actuator;

D. a GFCI device including

(1) contacts connected in said control circuit,

(2) a differential current transformer having a pair of primary windings and a secondary winding in which is developed an output signal indicative of an imbalance in the currents flowing in said primary windings,

(3) means responsive to said output signal for actuating said device contacts; and

E. sensing means coupled with the distribution circuit and said GFCI device for creating in response to a predetermined abnormal distribution circuit condition a current imbalance in said primary windings of said differential current transformer sufficient to cause actuation of said GFCI device contacts, said actuator thereupon operating to open said breaker contacts.

PLANT PATENTS

GRANTED JUNE 10, 1980

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,541

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Nov. 13, 1978, Ser. No. 960,489
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—19 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its well-branched plant, large foliage, very double, slightly fragrant flower of Neyron Rose.

4,542

DISTINCT VARIETY OF BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 5, 1978, Ser. No. 939,834
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has excellent timber quality, is fast growing, has strong central stem tendency due to the ability of the terminal bud to flush and outgrow the laterals, little sweep, extremely late in time of leafing.

4,543

DISTINCT VARIETY OF BLACK WALNUT TREE

Walter F. Beineke, West Lafayette, Ind., assignor to Purdue Research Foundation, West Lafayette, Ind.

Filed Sep. 5, 1978, Ser. No. 939,835
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—32 **1 Claim**

1. A new and distinct variety of black walnut tree substantially as illustrated and described, which has excellent timber quality, is fast growing, has strong central stem tendency, little sweep, few crooks; earlier than average in time of leafing, pistillate flowers early, pollen sheds mid-season, produces abundant annual crops of large-size nuts; averages 3 per cluster, the percentage of weight of kernel to nut approximately on the average 20 percent; nut bearing begins early in life of tree.

4,544

CHRYSANTHEMUM PLANT CULTIVAR NAME: STRIPES

Jack M. Meek, and William E. Duffett, both of Salinas, Calif., assignors to Yoder Brothers, Inc., Barberton, Ohio

Filed Feb. 9, 1979, Ser. No. 10,856
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—74 **1 Claim**

1. A new and distinct cultivar of *Chrysanthemum morifolium,* Ramat., plant as shown and described, known by the cultivar name Stripes and particularly characterized as to uniqueness by the combined characteristics of flat capitulum form; spooned daisy capitulum type; medium yellow ray floret color; diameter across face of capitulum ranging from 90 to 100 mm. at maturity; uniform seven week photoperiodic flowering response to short days; medium plant height when grown as a pinched spray pot; and semi-upright branching pattern.

4,545

SPATHIPHYLLUM NAMED BURTONI

Felix Stone, 819 Lytle St., West Palm Beach, Fla. 33405, and Richard I. Slaton, 1419 Beta Ct., West Palm Beach, Fla. 33406

Filed Mar. 5, 1979, Ser. No. 17,497
Int. Cl.[2] A01H *5/12*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct cultivar of Spathiphyllum, substantially as herein shown and described, characterized by foliage which is variegated from a mixture of green and cream-to-white to a substantially solid cream-to-white color.

PLANT PATENTS

GRANTED JUNE 10, 1980

DISTINCT VARIETY OF BLACK WALNUT TREE

PATENTS

GRANTED JUN. 10, 1980

ERRATA

For CLASS	See PATENT NO.
433–183	4,206,545
433–079	4,206,546
433–141	4,206,547
368–072	4,206,590
368–295	4,206,591
368–233	4,206,592
250–231 P	4,206,644
165–148	4,206,738
431–150	4,207,032
585–022	4,207,080
273–001 E	4,207,087
430–048	4,207,100
430–126	4,207,101
430–252	4,207,102
430–494	4,207,103
430–225	4,207,104
430–432	4,207,105
430–165	4,207,106
430–165	4,207,107
430–354	4,207,108
430–536	4,207,109
430–173	4,207,110
430–376	4,207,111
430–566	4,207,112
435–023	4,207,232
548–183	4,207,236
549–009	4,207,239
556–439	4,207,246
556–463	4,207,247
568–385	4,207,264
568–385	4,207,265
525–002	4,207,269
370–013	4,207,433
370–112	4,207,434
370–068	4,207,435
250–343	4,207,450
455–613	4,207,459
455–612	4,207,460
455–020	4,207,521
455–077	4,207,522
375–017	4,207,523
375–022	4,207,524
455–109	4,207,525
455–110	4,207,526
455–110	4,207,527
375–020	4,207,528
455–158	4,207,529
455–174	4,207,530
455–164	4,207,531
455–339	4,207,532

PATENTS

GRANTED JUNE 10, 1980

GENERAL AND MECHANICAL

4,206,512
LIMITED MOBILITY SLEEPING BAG
Robert D. Osborne, Box 377, Rural Retreat, Va. 24368
Filed Mar. 5, 1979, Ser. No. 17,354
Int. Cl.[2] A47G *9/00*
U.S. Cl. 2—69.5 **4 Claims**

1. A sleeping bag comprising a body portion, leg portions, and two sleeve members, said sleeve members being connected to said body portion at a juncture extending from an area proximate a shoulder portion of said body portion to an area proximate a waist portion of said body portion, first attachment means fixed to said body portion, second attachment means fixed to a first of said sleeve members, third attachment means disposed on the interior of said first sleeve member, and fourth attachment means disposed on the exterior of a second of said sleeve members, said first and second attachment means comprising a hook means and snap ring arrangement releasably connectable to permit connection of said first sleeve member to said body portion, said first sleeve member having an opening in a free end thereof adapted to receive a free end of said second sleeve members, said third and fourth attachment means being releasably connectable to permit connection of said second sleeve member to said first sleeve member.

4,206,513
NECKTIE MOLDING DEVICE AND METHOD OF USING
Robert Collins, 144 Shaw St., Garfield, N.J. 07026
Filed Oct. 23, 1978, Ser. No. 953,732
Int. Cl.[2] A41D *25/08, 25/14*
U.S. Cl. 2—152 R **4 Claims**

1. A necktie molding device comprising a longitudinally tapered, elongated hollow rigid member defining a correspondingly tapered aperture for the reception of the narrow portion of a necktie, said hollow member comprising:

a flat base having inwardly tapering, longitudinally extending side edges;

paired, angularly disposed, upstanding side panels defining longitudinal edges, each side panel perpendicularly attached to said side edges along a longitudinal edge thereof;

a roof attached to the free longitudinal edges of said side panels and extending therebetween;

a planar, tapering tongue extending from the tapering end of said base and beyond the terminus of said side panels and said roof, said tongue providing a brace for the positioning of a securing pin passing therebehind and through the lateral edges of said necktie, whereby said necktie is held in a knot-like shape.

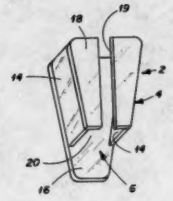
4. A method for donning a necktie, comprising the steps of:

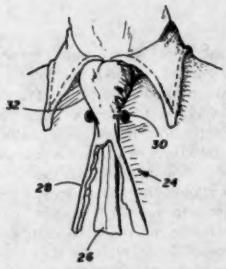
placing a necktie about a user's neck, said necktie including a first wide end and a second narrow end;

disposing said narrow end through a necktie molding device, said necktie molding device comprising a longitudinally tapered, elongated hollow member rigid defining a corresponding tapered aperture for the reception of said narrow end, and including a planar, tapering tongue extending from the tapering end thereof;

wrapping said wide end at least one time around said hollow member, thus forming a necktie loop about the neck of the user;

disposing said wide end through said necktie loop from under said necktie molding device and over said necktie molding device;



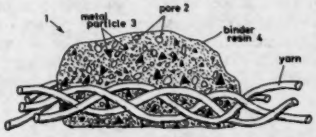


sliding said necktie molding device along said narrow end into the proximity of the neck of said user;

pinching said wide end at the base of said necktie molding device and about said tongue; and

securing said pinched wide end by a securing pin through the lateral edges of said wide end and behind said tongue.

4,206,514
SANITARY FOOTGEAR ARTICLES
Akira Yamauchi, 13-7, Minami Mukonoso 5-chome, Amagasaki, Japan
Filed Jun. 27, 1977, Ser. No. 811,979
Claims priority, application Japan, Jun. 23, 1976, 51-74764
Int. Cl.[2] A41B *11/00*
U.S. Cl. 2—239 **4 Claims**



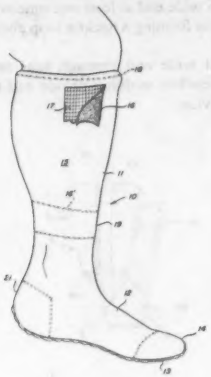
1. A sanitary footgear article of the sock, stocking or panty stocking type which has deposited on and adhering to the surface of the portion to be contacted directly with the sole of a wearer porous spots of a solid sanitary composition comprising a water-insoluble resin binder and a metal powder dispersed in and held by said resin binder, said metal being selected from the group consisting of copper, silver, copper-silver alloy and mixture thereof.

4,206,515

ATHLETIC SOCK

James D. Robinson, 290 Dewey Pl., Teaneck, N.J. 07666

Filed Sep. 18, 1978, Ser. No. 943,045
Int. Cl.[2] A41B 11/02
U.S. Cl. 2—241 3 Claims



1. Athletic foot apparel in the form of a sock comprising a padded bottom portion, an ankle portion and a calf portion, said ankle portion including two layers of fabric material and a layer of elastic material disposed between said two layers of fabric material and said calf portion including two layers of fabric material and a layer of elastic material disposed between said two layers of fabric material with the elastic layers of said ankle and calf portions being spaced away from one another to provide ventilation to at least a portion of the foot of the wearer with said bottom portion being comprised of a plurality of distinct layers of fabric material separate from the sock stitched together on the outer bottom of the sock in a configuration defining discrete areas to avoid sliding of said fabric layers of said padded bottom with respect to one another.

4,206,516

SURGICAL PROSTHETIC DEVICE OR IMPLANT HAVING PURE METAL POROUS COATING

Robert M. Pilliar, Toronto, Canada, assignor to Ontario Research Foundation, Sheridan Park, Canada

Filed Dec. 7, 1977, Ser. No. 858,417
Claims priority, application United Kingdom, Dec. 15, 1976, 52410/76
Int. Cl.[2] A61F 1/24, 1/00
U.S. Cl. 3—1.9 7 Claims

1. A surgical prosthetic device or implant comprising a composite structure consisting of a coherent solid metal substrate and a porous coating of at least one pure metal adhered to and extending over at least part of the surface of said substrate to a thickness of at least about 100 microns and having a porosity of about 10 to about 40% , said metal and pure metal being substantially non-corrodable and non-degradable by body fluids,

said porous coating having an irregular surface and a plurality of connected interstitial pores substantially uniformly distributed therethrough, said porous coating being formed by thermal decomposition of particles of at least one thermally-decomposable compound of said at least one pure metal and sintering of the thermally decomposed particles to cause bonding of the resulting irregularly-shaped pure metal particles to each other and to said substrate at their points of contact therewith,

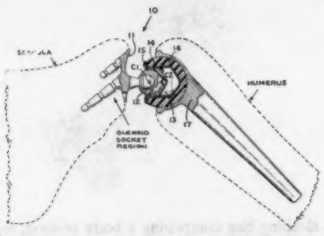
said particles of pure metal compound having a size at least sufficient to provide interstitial pores in said coating and the surface thereof which will permit the growth of bone tissue into said coating.

4,206,517

FLOATING CENTER PROSTHETIC JOINT

Michael J. Pappas, and Frederick F. Buechel, both of Irvington, N.J., assignors to Biomedical Engineering Corp., Newark, N.J.

Filed Dec. 1, 1977, Ser. No. 856,276
Int. Cl.[2] A61F 1/24
U.S. Cl. 3—1.91 11 Claims



1. An improved prosthetic joint of the type that comprises:

(a) Floating bearing means having portions defining a first floating bearing surface which has a cross-section conforming to a first circular arc;

(b) the floating bearing means having portions defining a second floating bearing surface which has a cross-section conforming to a second circular arc;

(c) a first member having portions defining a first anchor means for being secured to a first bone;

(d) the first member having portions defining a first bearing means for rotatably engaging the first bearing surface of the floating bearing means, thereby permitting relative motion of the first member and the floating bearing means about a first center of rotation;

(e) a second member having portions defining a second anchor means for being secured to a second bone;

(f) the second member having portions defining a second bearing means for rotatably engaging the second bearing surface of the floating bearing means, thereby permitting relative motion of the second member about a second center of rotation;

(g) wherein the first center of rotation is offset from the second center of rotation;

(h) said floating bearing means including flange means for limiting relative motion between the first member and the floating bearing means and for limiting relative motion between the second member and the floating bearing means,

the improvement comprising:

i. the floating bearing means comprises constraining means, the constraining means for inhibiting deformation of the flange means as the flange means acts to limit motion between the first member, the floating bearing means, and the second member; and,

j. the constraining means for allowing linear translational motion between the first member and the second member.

4,206,518

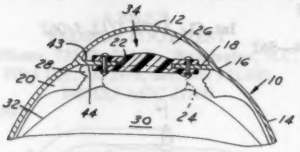
INTRAOCULAR LENS DEVICE

Fritz Jardon, 25050 W. 10-Mile Rd., Southfield, Mich. 75034, and Albert D. Ruedemann, Jr., 1018 3-Mile Rd., Grosse Pointe Park, Mich. 48230

Filed Jan. 31, 1977, Ser. No. 764,042
Int. Cl.[2] A61F 1/16, 1/24
U.S. Cl. 3—13 14 Claims

1. An intraocular lens device for implantation in the eye and

comprising a lens body formed from a medical grade silicone elastomer having a refractive index slightly higher than the aqueous humor of the eye and a desired refractive power, said lens body including a generally cylindrical marginal portion adapted to be fitted within the pupillary margin of the iris;



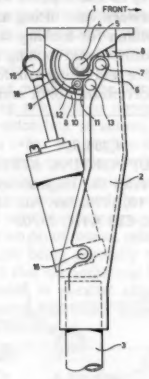
and means for the fixation of the lens device to the iris, said fixation means including a plurality of flexible plate-like tabs formed of said silicone material and projecting outwardly from said marginal portion of the lens body for placement in overlapping relation with at least one of the anterior and posterior surfaces of the iris.

4,206,519

STABILIZED ARTIFICIAL KNEE MECHANISM

Brian G. Blatchford, Basingstoke, and Paul A. Tucker, Yeovil, both of England, assignors to Chas. A. Blatchford & Sons Limited, Basingstoke, England

Filed Aug. 8, 1978, Ser. No. 931,945
Int. Cl.² A61F 1/04
U.S. Cl. 3—27 **9 Claims**



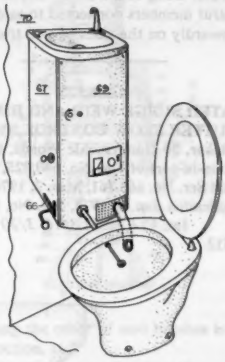
1. An artificial leg having relatively movable upper and lower components and a stabilised knee mechanism, which mechanism comprises a hollow brake drum and a brake shoe inside the drum, the drum being connected to one of the said components and the shoe being connected to the other of the said components, and means responsive to movement of one of the said components relative to the other of the said components, which movement results from application of a load on the leg, the said means causing the shoe frictionally to engage the inner surface of the drum so as to resist flexion of the knee mechanism.

4,206,520

DOUCHE APPLIANCE

John Fulford, 10 Sunset Point Dr., Mittagong, N.S.W. 2575, Australia

Filed Dec. 18, 1978, Ser. No. 970,167
Claims priority, application Australia, Jan. 23, 1978, 32658/78; May 10, 1978, 35968/78; Sep. 15, 1978, PD5967
Int. Cl.² A47K 3/22, 11/08
U.S. Cl. 4—665 **17 Claims**



1. A douche appliance connectable to the pan of a water closet suite, said pan including a sparging lip, comprising:

a spray-arm assembly including a conduit guide duct, a conduit co-axially extending through said conduit guide duct which is extendable into said pan through a wall thereof, a sprayhead on one end of said conduit extendable into said pan with said conduit, and a means for connecting the other end of said conduit to a pressurized water supply, said conduit being movable from an inoperative non-extended position in which said sprayhead is located under said sparging lip to an operative extended position in which said sprayhead is located substantially centrally of said pan;

an instantaneous heating, thermostatically-controlled water heater provided in a flow line between said pressurized water supply and said other end of said conduit; and,

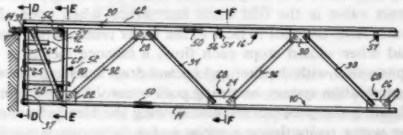
an electrically-operated body parts drier having a warm air outlet which, in a first operating mode, is coupled via a warm air duct to an interior space of said pan and, in a second operating mode, is coupled to the atmosphere at a location suitable for the drying of a user's hands.

4,206,521

BULKHEAD FOR SWIMMING POOLS

Dekkers H. Davidson, 420 Nannyhagen Rd., Thornwood, N.Y. 10594

Filed Sep. 29, 1978, Ser. No. 947,289
Int. Cl.² E04H 3/16; A47K 3/14
U.S. Cl. 4—505 **6 Claims**



1. In a movable bulkhead for use in a swimming pool and including means for supporting and moving said bulkhead along the sides of the pool, the improvement comprising a frame supporting a barrier and a platform supported above said

barrier, said frame comprising at least one longitudinally extending vertical truss means, said platform extending to both sides of said truss means and outrigger means extending laterally from said truss means for supporting said barrier said vertical truss means comprising an upper and a lower chord, intermediate truss members connecting said chords in vertically spaced relation, said laterally extending outrigger means comprising a plurality of brace means longitudinally spaced from one another along said truss means, said outrigger means comprising strut members connected to said lower chord and extending upwardly on the sides of said truss means.

4,206,522

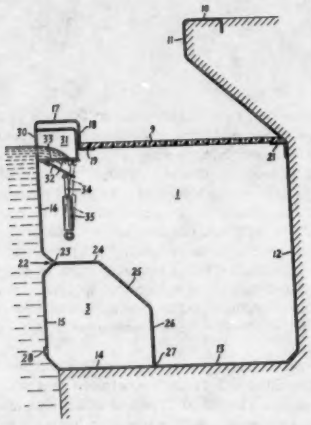
AUTOMATED SURGE WEIR AND RIM SKIMMING GUTTER FLOW CONTROL SYSTEM

William H. Baker, 30 Honeysuckle Woods, Clover, S.C. 29710

Continuation-in-part of Ser. No. 640,825, Dec. 15, 1975, abandoned, and Ser. No. 663,161, Mar. 2, 1976, abandoned. This application Jan. 9, 1978, Ser. No. 867,737

Int. Cl.[2] **E04H** *3/16, 3/20*

U.S. Cl. 4—512 **55 Claims**



1. An automated skimming flow perimeter gutter control system for swimming pools comprising, in combination, a water cleaning and recirculation system receiving water from the pool, cleaning it, and returning it to the pool; a first drain line connecting the pool to the water recirculation system for water feed from the pool for cleaning; a gutter conduit for disposition about the perimeter of a swimming pool, receiving overflow across a top edge thereof and adapted to carry water at a level below a predetermined level in the swimming pool; a second drain line connecting the gutter conduit with the water recirculation system for water feed from the gutter for cleaning; skimming means receiving skimming flow across a top edge thereof at the perimeter of the swimming pool; a first drain valve in the first drain line which when open allows water from the pool to flow to the water recirculation system, and when closed stops such flow; a balance means in flow connection with the first and second drain lines and the water recirculation system, receiving pool water via each draim line, blending the pool waters, and flowing the blended waters to the water recirculation system; and at least one water level-responsive sensor sensing and directly responding to the level of water in the balance means and adjusting the water recirculation flow from the pool and from the gutter to increase water recirculation system capacity for flow from the gutter and prevent gutter water flooding back from the gutter to the pool.

4,206,523

APPARATUS FOR LIFTING DISABLED PERSONS

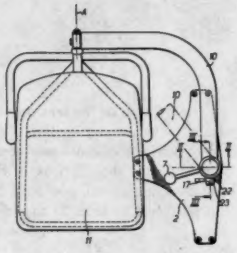
David R. James, Hasfield, England, assignor to Mecanaids Limited, Gloucester, England

Continuation of Ser. No. 738,594, Nov. 3, 1976, abandoned. This application Aug. 17, 1978, Ser. No. 934,793

Claims priority, application United Kingdom, Nov. 28, 1975, 48916/75

Int. Cl.[2] **A47K** *3/12, 3/062*

U.S. Cl. 4—562 **11 Claims**



1. A bath lift comprising a mount positioned on or proximate a bath,

a telescopic column having a lower portion fixed to said mount and an upper portion vertically movable with respect to said lower portion, said upper portion being normally rotatably fixed with respect to said lower portion of said column,

means for moving said upper portion of said column vertically with respect to said lower portion,

arm support means fixed to said upper portion of said column,

a lifting arm projecting from said column and mounted on said arm support, said lifting arm being swingable about a vertical axis relative to said support means, and

means connected between said lifting arm and said upper portion of said column for locking said lifting arm in a selected angular position, said locking means being manually releasable to free said lifting arm for rotational movement on said support means about said vertical axis.

4,206,524

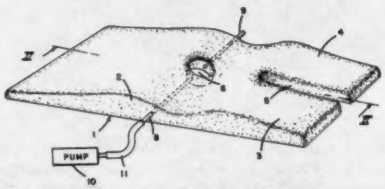
INVALID SUPPORTING STRUCTURE

Roger G. Cook, 213 Greeley St., Hightstown, N.J. 08520

Filed Oct. 10, 1978, Ser. No. 949,880

Int. Cl.[2] **A47C** *23/00*

U.S. Cl. 5—468 **8 Claims**



1. An invalid supporting structure comprising a resilient, sponge-like pad having at least one aperture extending from the top to the bottom of the pad and located at a position adapted to register with a predetermined area of a received person, a pair of laterally extending conduits in the pad extending from the aperture to the side wall of the pad and means for passing a gas into and venting the gas from the aperture coupled to one of the conduits, the pad having a thickness varying

along its longitudinal dimension in accordance with the weight distribution and physical contour of a person and wherein the density of the pad combined with the variation in thickness prevents a complete compression of the pad when receiving a person and provides a uniform support for the body over the supported area.

4,206,525

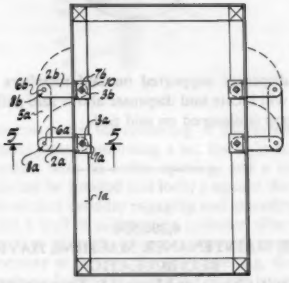
BEDSIDE FOOT-REST

Willie L. Williams, 722 W. 2nd St., Washington, N.C. 27889

Filed Dec. 21, 1978, Ser. No. 971,894

Int. Cl.[2] A47C *21/00*

U.S. Cl. 5—507 **3 Claims**



1. A bed frame foot-rest device comprising in combination: an elongated member and a pivot means at a proximate end thereof for mounting the elongated member for horizontal pivotal movement of the elongated member, for the mounting pivotally of the elongated member on a horizontal bed-frame support, such that a distal opposite end of the elongated member is supportable of a person's foot when a person is sitting on a side of a bed, as a foot-rest, and an additional horizontally-extending structure continuous with and extending from said distal opposite end at substantially a right angle to a longitudinal axis of said elongated member such that the additional horizontally-extending structure is substantially parallel to a side of a bed when said pivot means is mounted on a side member of a horizontal bed-frame support, and there being two of said elongated members, the distal end of the two elongated members being attached to opposite ends of said additional horizontally-extending structure, one attached to one end thereof and the other attached to the other opposite end thereof, and there being two of said pivot means, one proximate end of one of said two elongated members being mounted by one of the two pivot means and the other proximate end of said two elongated members being mounted by the other remaining one of the two pivot means, said additional horizontally-extending structure being pivotally mounted onto each of said distal ends, such that the additional horizontally-extending structure is collapsible in parallel alignment beneath a side member of a horizontal bed-frame support on which the two pivot means are mountable.

4,206,526

HOSE WASHING MACHINE

Francis E. Bertram, Box 138A, Malone, Wis. 53049

Filed Sep. 22, 1978, Ser. No. 944,964

Int. Cl.[2] D06G *1/00*; A46B *13/04*

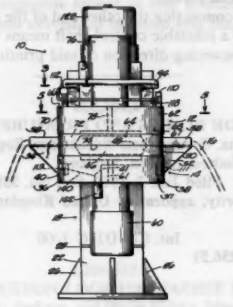
U.S. Cl. 15—40 **18 Claims**

1. A hose washing machine comprising:

a frame,

a pair of brushes supported by said frame and in opposed relationship and for receiving a hose therebetween as the hose is moved longitudinally therethrough, each of said brushes having a planar brush face engageable with the hose, said brushes being supported for rotation about an axis transverse to said planar brush faces and the brush face of one of said brushes being positionable in opposed mating relation with the brush face of the other brush, and at least a portion of each of said brush faces engaging the hose and moving in a direction transverse to the direction of movement of the hose,

means for rotating one of said brushes in one rotational direction,



means for rotating the other of said brushes in an opposite rotational direction, and

means for moving at least one of said brushes away from the other of said brushes to facilitate placement of a hose therebetween and for moving said at least one of said brushes toward the other of said brushes to cause engagement of said brushes with said hose.

4,206,527

APPARATUS FOR DEVELOPING PRINTING PLATES COMPRISING UPPER AND LOWER ROLLS ARRANGED IN PAIRS

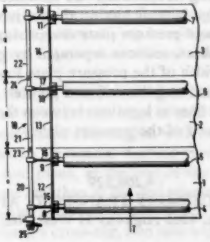
Wolfgang Diels, Mainz-Weisenau; Dieter Krause, and Dieter Töpfer, both of Wiesbaden, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,887

Claims priority, application Fed. Rep. of Germany, Mar. 23, 1978, 2812688

Int. Cl.[2] G03D *5/06*; B30B *3/04*

U.S. Cl. 15—102 **11 Claims**



1. In an apparatus for developing printing plates comprising pairs of upper and lower rolls adapted to convey said printing plates, bearing means at each end of each upper roll, and toggle lever means adapted to raise and lower said upper rolls with respect to said lower rolls,

the improvement comprising a plurality of pivotal forked head means each having an upper and lower arm adapted to engage each of said bearing means,

swivel shaft means supporting said forked head means and

being parallel to the conveying direction of said printing plates,

said upper arms of said forked head means being adapted to exert pressure on the top of said bearing means when said bearing means is in a lowered position, and said lower arms of said forked head means being adapted to support said bearing means in a raised position,

means connecting one end of a toggle lever means to each forked head means,

and means connecting the other end of the said toggle lever means to a rotatable control shaft means which is parallel to the conveying direction of said printing plates.

4,206,528

DOCTOR BLADES AND PRESSURE PLATES

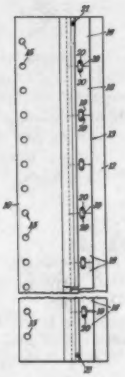
David B. Klemz, Cowden, near Edenbridge, England, assignor to Vickerys Limited, London, England

Filed Jan. 2, 1979, Ser. No. 550

Claims priority, application United Kingdom, Jan. 4, 1978, 221/78

Int. Cl.[2] D21G *3/00*

U.S. Cl. 15—256.51 **3 Claims**



1. A doctor for use in a papermaking machine, comprising a blade holder, a one-piece doctor blade having its rearward edge accommodated in the blade holder and including a portion projecting forwardly from the holder, said doctor blade extending for substantially the full length of the holder, and a pressure plate having its rearward end mounted on the holder and its forward edge bearing against the projecting portion of the doctor blade, said pressure plate comprising a plurality of closely adjacent, short, sections separated by gaps which extend for the full width of the pressure plate from the forward edge to the rearward end thereof, and pivoted linkages interconnecting said sections at locations between the forward edge and the rearward end of the pressure plate.

4,206,529

PAIL AND ACCESSORY TRANSPORT APPARATUS

Roger W. Neumann, 4265 Highway H West, Rte. 2, Kewaskum, Wis. 53040

Filed May 16, 1979, Ser. No. 39,616

Int. Cl.[2] A47J *47/18;* A47L *17/02*

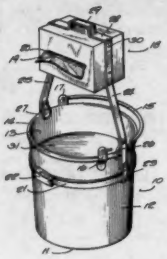
U.S. Cl. 15—264 **4 Claims**

1. Towel holding apparatus characterized by facilitating the dual functions of dispensing disposable towels and enabling carrying of a pail, comprising:

a band for being formed into a loop,

a coupling device operative to clamp said band around the external surface of said pail,

a pair of members connected to said band for extending generally upwardly from it and to above the top opening of said pail, and



a towel dispenser supported on said members at a place which will locate said dispenser above said pail when said band loop is clamped on said pail.

4,206,530

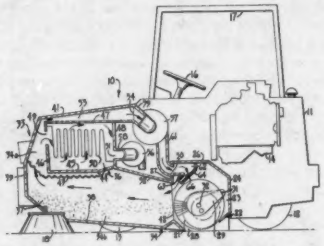
SURFACE MAINTENANCE MACHINE HAVING AIR RECIRCULATION

Harley E. Kroll, Chaska, and Donald L. Thomsen, Minneapolis, both of Minn., assignors to Tennant Company, Minneapolis, Minn.

Filed Jan. 30, 1978, Ser. No. 873,226

Int. Cl.[2] A47L *11/202*

U.S. Cl. 15—340 **15 Claims**

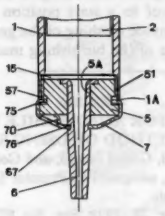


1. A surface cleaning machine having a normally longitudinally forward direction of movement, said machine comprising a frame, a plurality of surface engaging wheels suitable for supporting said frame, a brush housing transported by the frame, said brush housing having a downwardly facing opening and a debris discharge opening, a power driven cylindrical brush mounted in the housing for rotation about a transverse axis, said brush being adapted to engage the surface to be cleaned while directing swept material through the debris discharge opening, a hopper supported with respect to the frame, said hopper having a debris inlet opening adjacent one end thereof, said inlet opening communicating directly with the brush housing discharge opening, said hopper having an air outlet opening associated with the end opposite said one end, said air outlet opening being remote from the debris inlet opening, air recirculating means for withdrawing air from said hopper through said air outlet opening and discharging air under pressure into the brush housing whereby at least a substantial quantity thereof moves through the housing and again through said hopper to assist in propelling light weight debris in a direction toward said opposite end in said hopper thereby increasing the effective capacity of said hopper.

4,206,531
SUCTION PUMP

Walter Haeuptli, Aarburg, Switzerland, assignor to Homax AG, Oberwil, Switzerland

Filed Sep. 9, 1977, Ser. No. 832,030
Int. Cl.[2] B08B 5/04
U.S. Cl. 15—341 9 Claims



1. In a suction pump for removing of excess soldering tin from a soldered joint, comprising a suction cylinder having a collecting nozzle with an outlet opening, and a reciprocable piston which can be pressed and locked against the force of a spring in the suction cylinder engaging and extending between the piston and a wall of said suction cylinder, after which the lock is released to cause the piston to promptly move to effect a suction pressure at the nozzle outlet opening, the improvement comprising wherein the collecting nozzle is supported for movement relative to the suction cylinder and the longitudinal axis thereof extends parallel to the longitudinal axis of the suction cylinder and shock absorbing means for absorbing shocks imparted to the collecting nozzle while held against a workpiece by the reactive force generated by the release of the piston, said shock absorbing means being connected between said cylinder and said nozzle.

4,206,532
HINGE CONSTRUCTION

Mario M. DeLorenzo, P.O. Box 203, Glen Ellen, Calif. 95442

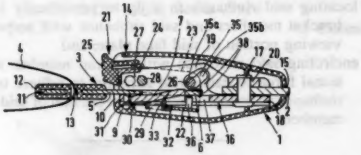
Continuation-in-part of Ser. No. 763,368, Jan. 28, 1977, Pat. No. 4,713,056. This application Aug. 30, 1978, Ser. No. 938,325
Int. Cl.[2] E05D 11/06
U.S. Cl. 16—191 6 Claims

3. A hinge construction comprising a pair of complementary hinge portions each having a confronting edge when joined, a series of pairs of rolled long segments arranged in spaced relationship to one another on the confronting edge of one of said pair of hinge portions, a relatively inflexible short segment on said confronting edge of said one hinge portion between each pair of said rolled long segments thereon; each of said short segments having a straight inner edge, notches in said confronting edge of said one hinge portion on opposite ends thereof and between said pairs of rolled long segments, a series of rolled long segments on the confronting edge of said other hinge portion of said pair of hinge portions arranged in spaced relationship to one another, a pair of relatively inflexible short segments on said confronting edge of said other hinge portion; each of said short segments having a straight inner edge and extending between said rolled long segments in alignment with said short segments on the confronting edge of said one hinge portion, notches in the confronting edge of said other hinge portion located on opposite sides of said rolled long segments for receivimg said pairs of rolled long segments on the confronting edge of said one hinge portion, and a pintle pin passing through said rolled segments for joining said hinge portions together in swingable relation to one another with the inner edges of said short segments in abutment with one another and said rolled long segments locked in said notches preventing relative longitudinal movement between said hinge portions.

4,206,533
PUSH BUTTON LOCK FOR SAFETY BELT

Hermann Meiller, Amberg, and Horst Hocke, Mimbach, both of Fed. Rep. of Germany, assignors to Messrs. Willibald Grammer, Fed. Rep. of Germany

Filed Apr. 26, 1978, Ser. No. 900,106
Claims priority, application Fed. Rep. of Germany, Apr. 30, 1977, 7713685[u]
Int. Cl.[2] A44B 11/25
U.S. Cl. 24—230 AK 9 Claims



1. A push button lock for a safety belt comprising, in combination:

(a) A first lock part having an insertion opening at one end;

(b) A second slide-in tongue part insertable into said opening in an axially extending plane of said first part;

(c) A transverse edge on said tongue part;

(d) A receiving housing in said first lock part;

(e) A fixed stop on said receiving housing engageable by the said transverse edge to lock said second part relative to said first part;

(f) A web portion on said receiving housing;

(g) A side wall on each side edge of said web portion;

(h) A slot in each side wall, angled with respect to said axial plane, so as to be spaced further from said stop, with respect to said plane, at the end of the slot more remote from said one end than at the end nearer said one end; and

(i) A push button axially slideable in said receiving housing and comprising a cross-bar, two side walls spaced apart by said cross-bar, a manually actuable portion at said one end, and elements engaging in said slots whereby, when the manually actuable portion of the push button is pressed in an axial direction towards the interior of the receiving housing, said elements will guide said push button, from a first position in which the cross-bar locks the tongue part, so that the transverse edge engages said stop effective to lock the tongue part relative to the first part to a second position in which the transverse edge can disengage the stop to release the tongue part.

4,206,534

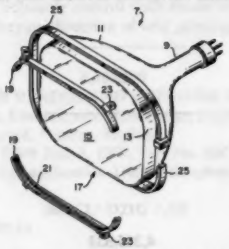
IMPLOSION-RESISTANT CATHODE RAY TUBE AND FABRICATING PROCESS

O. Wendell Amstutz, Lima; William A. Dickinson, and James F. Kreidler, both of Ottawa, all of Ohio, assignors to GTE Products Corporation, Stamford, Conn.

Division of Ser. No. 890,080, Mar. 27, 1978, Pat. No. 4,170,027. This application Feb. 14, 1979, Ser. No. 12,166

Int. Cl.[2] H01J *9/00*

U.S. Cl. 29—25.13 **4 Claims**



1. A method for manufacturing an implosion-resistant cathode ray tube having a funnel member with a neck portion containing at least one electron gun and tapering to a flared portion sealed to a skirt portion joined to the viewing portion of a face plate member comprising the steps of:

selecting a pair of substantially flat rimbands and welding bracket members thereto at designated locations;

applying an adhesive to the inner surface of said substantially flat rimbands;

locating said rimbands in a jig to positionally locate said bracket members and said rimbands with respect to said viewing portion of said face plate; and

encircling said rimbands with a strap member under tensional force to cause said adhesive to adhere to and said rimbands to conform to said skirt portion of said face plate member.

4,206,535

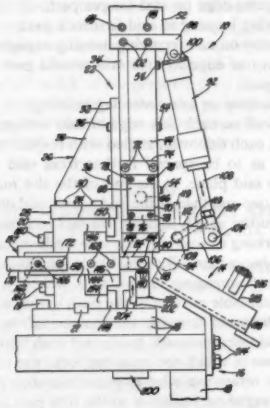
LOADER FOR GEAR BURNISHING MACHINE

Robert G. Roth, East Detroit, Mich., assignor to Anderson-Cook, Inc., Frasier, Mich.

Filed Feb. 22, 1979, Ser. No. 13,852

Int. Cl.[2] B21C *37/30*; **B21D** *7/04*

U.S. Cl. 29—90 B **19 Claims**



1. A loader for a gear burnishing machine including a pair of elongated gear racks mounted for movement in opposite directions relative to each other and having teeth for meshing with a toothed gear to be burnished such that the meshing provides the sole support for the gear, the loader comprising:

a hopper for storing toothed gears to be burnished;

a carrier for sequentially moving at least one gear at a time from the hopper to the burnishing machine; and

a guide for engaging the teeth of a gear on the carrier during movement thereof to a start position between the gear racks so as to provide meshing of the gear with at least one of the gear racks of the burnishing machine.

4,206,536

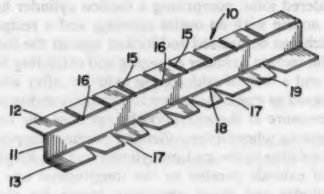
REPAIR PANEL FOR AUTOMOBILE PINCHWELDS AND METHOD OF USING SAME

Leonard B. Hammond, Grand Island, and George B. Hammond, Eustis, both of Fla., assignors to Premier Industrial Corporation, Cleveland, Ohio

Filed Dec. 28, 1978, Ser. No. 973,861

Int. Cl.[2] B22D *19/10*

U.S. Cl. 29—402.11 **5 Claims**



1. A repair strip for reconstructing the pinchweld of an automobile, comprising a highly malleable, easily bendable, elongated, generally Z-shaped metal strip having essentially no elastic memory and having a central, longitudinally extending, generally vertical portion of relatively thin cross section which may be manually deformed, a first portion extending horizontally from one longitudinal edge of said central portion to provide an upper sealing flange, a second portion extending horizontally from the opposite longitudinal edge of said central portion in a direction opposite from said first portion to provide a lower support flange, said first and second portions each being interrupted with a plurality of closely-spaced part slots each intersecting its adjacent longitudinal edge of said central portion, and the slots in each of said first and second portions being in substantial planar alignment with each other relatively to said central portion, whereby said strip may be manually deformed arcuately along its longitudinal axis to conform to the pinchweld and retain its conformed shape.

4,206,537

METHOD OF MAKING A SIGHT GLASS ASSEMBLY

Charles E. Meginnis, 529½ Nancy St., Charleston, W. Va. 25302

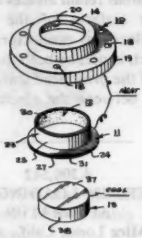
Continuation of Ser. No. 833,296, Sep. 14, 1977, abandoned, which is a division of Ser. No. 585,817, Jun. 11, 1975, abandoned. This application Oct. 4, 1978, Ser. No. 949,422

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—447 **11 Claims**

1. A method of making a sight glass assembly comprising forming a housing having an opening therethrough provided with a peripheral wall, forming a liner of a rigid material insertable in said housing opening so that under predetermined equilibrium conditions an outer surface thereof engages said housing wall, forming a lens having a peripheral wall sized to fit within said rigid liner under said predetermined equilibrium conditions, effecting a change in said predetermined equilibrium conditions of said lens and said rigid liner sufficient to cause an increase in the radial differential of said lens and the inner surface of said rigid member, inserting said lens in said rigid liner while maintaining said change in conditions so that

said lens wall is positioned in opposed relation to the inner surface of said liner, inserting a liner having a thickness greater than the radial differential of said lens and the inner surface of said rigid member when said change in equilibrium conditions is effected, formed of a deformable material, between said lens wall and the inner annular surface of said rigid liner while maintaining said change in conditions, maintaining said deformable liner interposed between said lens wall and the inner



surface of said rigid liner while permitting said lens and said rigid liner to return to said equilibrium condition whereby the radial differential of said lens wall and the inner surface of said rigid liner will decrease causing said lens and rigid liner walls to engage said deformable liner to place said lens in radial compression and form a fluid tight seal between said lens and said rigid liner, and inserting said rigid liner with said lens mounting therein into said housing opening so that the outer surface of said rigid member engages said housing wall.

4,206,538

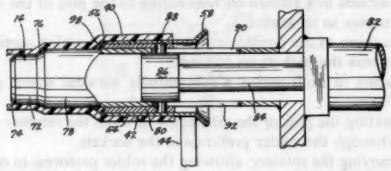
INPLACE GASKET BELLING METHOD AND APPARATUS

Fay A. Hayes, 242 NW. 12th Ave., Boca Raton, Fla. 33432, and Leonard L. Hayes, 1906 10th Ave., Lewiston, Id. 83501

Filed Oct. 23, 1978, Ser. No. 953,592

Int. Cl.[2] B23P *11/02, 19/02*

U.S. Cl. 29—450 **15 Claims**



1. In an inplace gasket belling machine for belling one end portion of a plastic pipe and inserting a gasket therein, the improvement comprising,

a pair of belling mandrels including a preliminary mandrel and a primary mandrel,

means for alternately moving said mandrels into aligned positions in alignment with a pipe end portion,

a belling sleeve,

means for supporting said belling sleeve in axial alignment with said pipe end portion,

said preliminary mandrel including an outwardly and rearwardly flared pipe expanding portion and a belling sleeve carrying portion disposed rearwardly thereof,

means for axially advancing and retracting said mandrels, in the aligned positions therefor, through said belling sleeve and into said pipe end portion,

said pipe expanding portion being adapted to expand said pipe end portion in response to advancement of the preliminary mandrel whereby the belling sleeve is inserted into said expanded pipe end portion,

said primary mandrel including a gasket carrying portion and a gasket positioning sleeve slidable on said gasket carrying portion and adapted to engage a gasket carried thereon,

said gasket positioning sleeve, in response to advancement of the primary mandrel, being adapted to advance a gasket into said belling sleeve,

means for retracting said belling sleeve from the pipe end portion, and

means for retracting the gasket positioning sleeve independently of the gasket carrying portion whereby said pipe end portion may collapse onto said gasket carrying portion.

12. A method or belling one end portion of a plastic pipe and inserting a gasket therein comprising

radially expanding the pipe end portion,

inserting a belling sleeve into the expanded pipe end portion,

providing a mandrel adapted to carry a gasket thereon,

engaging a gasket on said mandrel,

advancing said mandrel into the inserted belling sleeve to the extent that said gasket is positioned within said expanded pipe end portion,

retracting the belling sleeve from said expanded pipe end portion thereby allowing the expanded pipe end portion to collapse onto said mandrel, and

retracting said mandrel from the collapsed pipe end portion.

4,206,539

DEVICE FOR BENDING, CRIMPING, AND TRIMMING LEADS OF TRANSISTORS OR SIMILAR COMPONENTS

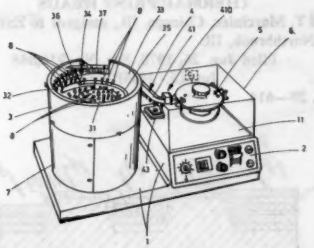
Thomas Weresch, Greschbachstr. 19, D-7500 Karlsruhe 41, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,146

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722212

Int. Cl.[2] B21F *45/00*; B65G *47/24*

U.S. Cl. 29—566.3 **43 Claims**



1. Apparatus for automatically preparing leads of electrical components such as transistors and the like of the type having leads protruding from one side of the body of the component; said apparatus comprising:

a tool carrier rotatable about a tool carrier axis;

first and second bending and crimping tools disposed pairwise at the periphery of the carrier for movement therewith, said first tool being mounted at the carrier for pivotal movement about a tool pivot axis extending parallel to the tool carrier axis;

cam means operable in dependence on the rotational position of the carrier to control the movement of said first tool about the tool pivot axis between a tool open position with said first and second tools apart from one another and a tool closed position with said first and second tools adjacent one another to bend and crimp component leads disposed therebetween,

a transfer slot disposed adjacent the carrier along the travel path of the first and second tools;

and conveyor means for conveying electrical components with unprepared leads to said transfer slot,

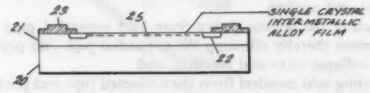
said tools and cam means being configured and disposed to maintain said tools in an open position as they pass adjacent said transfer slot with one of said tools gripping an unprepared component disposed in said transfer slot, followed by closing of said tools to bend and crimp the leads of said component while carrying the component along with the carrier.

4,206,540

SCHOTTKY DEVICE AND METHOD OF MANUFACTURE USING PALLADIUM AND PLATINUM INTERMETALLIC ALLOYS AND TITANIUM BARRIER

Herbert J. Gould, Hawthorne, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Jun. 2, 1978, Ser. No. 911,764
Int. Cl.² H01L *29/48*
U.S. Cl. 29—590 **10 Claims**



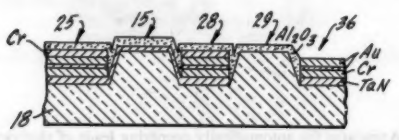
1. The process of manufacture of a schottky device comprising the steps of depositing a first metal selected from the group consisting of palladium and platinum on the surface of a silicon wafer, sintering said first metal into said surface of said silicon wafer, completely removing all traces of said first metal and any silicides thereof from said surface such that the exposed surface exhibits a sharp knee reverse voltage characteristic when engaged by a tungsten probe, and depositing a high work function metal on said exposed surface.

4,206,541

METHOD OF MANUFACTURING THIN FILM THERMAL PRINT HEADS

Edmund T. Marciniec, Chicago, Ill., assignor to Extel Corporation, Northbrook, Ill.

Filed Jun. 26, 1978, Ser. No. 918,845
Int. Cl.² H05B *3/16*
U.S. Cl. 29—611 **10 Claims**



1. In the method of manufacture of a thin-film dot matrix thermal print head that comprises a dielectric substrate having one surface including a pattern of resistance heater print elements, electrical connectors, and intervening blank spaces, which method includes the steps of:

A. selectively forming a high-resistance electrically conductive film on those areas of one surface of a dielectric substrate that are to constitute the print elements and electrical connectors of the print head, leaving blank spaces that constitute neither print elements nor electrical connectors; and

B. selectively forming one or more additional films, including at least one low-resistance electrically conductive film, on those areas of the surface of the high-resistance film that are to constitute the electrical connectors;

the improvement comprising the following additional step:

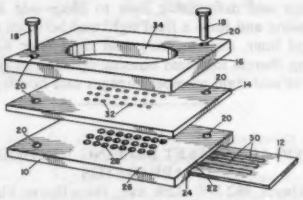
X. selectively removing substrate material from the one surface of the dielectric substrate, prior to step A, in all and only those areas that are to constitute electrical connectors in the completed print head, to a depth at least equal to the sum of the thicknesses of all of the films to be applied to the one substrate surface in step B, without a corresponding removal of substrate material from the areas that are to constitute print elements or from the blank spaces, so that the print elements are formed on the extreme outer surface areas of the substrate at an elevation at least as great as the outermost surfaces of the electrical and the blank areas retain an elevation at least as great as the outermost surfaces of the electrical connectors, whereby the electrical connectors are protected against external contact, in use, by both the print elements and the blank spaces of the print head and accumulation of deposits of material between the electrical connectors is precluded.

4,206,542

SOLDER PREFORM LOADING METHOD AND APPARATUS

Joseph A. Reavill, Mira Loma, Calif., assignor to General Dynamics Pomona Division, Pomona, Calif.

Division of Ser. No. 886,215, Mar. 13, 1978, Pat. No. 4,164,064.
This application Jan. 18, 1979, Ser. No. 4,389
Int. Cl.² H01R *43/00*
U.S. Cl. 29—877 **3 Claims**



1. A method of loading solder preforms on the pins of a multiple pin connector, comprising:

preparing a positioning plate having a plurality of open sockets in a pattern corresponding to the pins of the connector to be loaded,

attaching to the positioning plate a retainer which partially closes the sockets on one side,

placing in each socket a substantially toroidal solder preform,

inserting the pins of the connector through the retainer and through the solder preforms in the sockets,

removing the retainer, allowing the solder preforms to drop onto the connector pins,

and removing the positioning plate from the connector.

4,206,543

PIN INSERTION TOOL

William M. Chisholm, Midlothian, Va., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Nov. 30, 1978, Ser. No. 965,008
Int. Cl.² H05K *3/30*
U.S. Cl. 29—739 **8 Claims**

1. A pin insertion tool for inserting a pin into an aperture of a support, comprising:

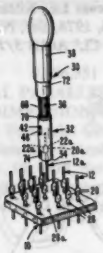
a guide member having one end facing in a given direction;

means, formed with said guide member and moved into complementary alignment with an external facility when the tool is moved toward the aperture in the support, for aligning the tool with the external facility;

a pin-insertion member;

means for mounting said pin-insertion member adjacent to said guide member and for permitting limited movement of said pin-insertion member relative to said guide mem-

ber, said pin-insertion member having one end facing in the given direction; and



a pin-retaining means formed with and at the one end of the pin-insertion member for releasably retaining at least a portion of a pin therein.

4,206,544

APPARATUS FOR REMOVING COUPLING ELEMENT RESIDUALS

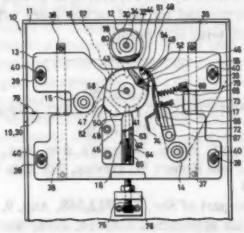
Hideo Shimai, Namerikawa, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Dec. 14, 1978, Ser. No. 969,748

Claims priority, application Japan, Dec. 24, 1977, 52/174514[U]

Int. Cl.[2] B29D 5/00

U.S. Cl. 29—770 **10 Claims**



1. An apparatus for removing coupling element residuals from a chain of interengaged coupling elements of a coupled pair of slide fastener stringers moving along a path therein, comprising:

(a) a frame;

(b) a scraper roll rotatably mounted on said frame and having peripheral tooth means, said scraper roll being adapted to be driven for continued rotation;

(c) a tumbler roll idly rotatably supported on said frame for carrying the slide fastener stringers on its peripheral portion confronting said tooth means, said tumbler roll including a wing projecting radially outwardly thereof for bringing the chain of coupling elements thereon into contact with said tooth means by rotation of said tumbler roll; and

(d) means on said tumbler roll for initially engaging the slide fastener stringers at a predetermined position thereon so as to place the coupling element residuals on said wing, said tumbler roll being thereafter rotatable in response to engagement of said engaging means with the slide fastener stringers while the latter are being fed along said path.

4,206,545

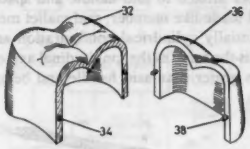
PREFABRICATED FULL CROWN SYSTEM

Raymond E. Lord, 418 Church St., North Adams, Mass. 01247

Filed Mar. 20, 1978, Ser. No. 888,180

Int. Cl.[2] A61C 5/08

U.S. Cl. 433—183 **5 Claims**



1. A full crown system comprising a single thickness crown of two separate pieces joined to form a unitary crown adapted to be mounted on and surround a prepared tooth stump to be capped, each of said pieces extending only part way around said stump when mounted thereon, one of said pieces being a metal member providing all of the mesial, distal, lingual, and occlusal or incisal surfaces of the crown, the other of said pieces being a plastic member providing only the esthetic facial surface of the crown, mating surfaces provided on said two pieces serving to join or splint said members without overlap of said members.

4,206,546

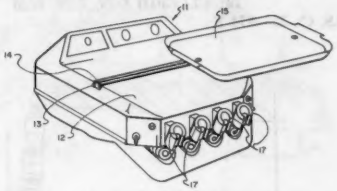
TRACK SYSTEM

Robert R. Runnells, Kaysville; John C. Schmoegner, Kearns; Roland G. Larsen, and Robert A. De La Mare, both of Salt Lake City, all of Utah, assignors to MDT Instrument Company, Tualatin, Oreg.

Filed Mar. 20, 1978, Ser. No. 888,220

Int. Cl.[2] A61C 19/02

U.S. Cl. 433—79 **5 Claims**



1. In a dental instrument delivery system including an instrument deck with an upper tray surface, the improvement which comprises providing said surface on a tray mounted on a sliding track assembly including:

a slide guide member mounted atop said instrument deck;

a slide body member mounted to the bottom of said tray; and

a floating bearing assembly coupling said slide body to said slide guide;

said slide body being movable longitudinally with respect to said slide guide so that the tray may be suspended in cantilever relation over either of the side edges of said deck.

4,206,547

DENTAL INSTRUMENT

Asami Tanaka, 9307 North Lavergne, Skokie, Ill. 60077

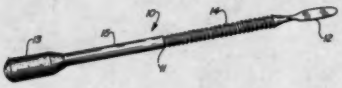
Filed Sep. 29, 1978, Ser. No. 946,878

Int. Cl.[2] A61C 3/08

U.S. Cl. 433—141 **5 Claims**

1. A unitary instrument for use in making a dental restorative

having an understructure and a buildup of porcelain thereon, and for regulating condensation of the porcelain during buildup, said instrument comprising an elongated handle; a narrow blade-like member affixed to said handle and protruding therefrom to be manipulated to effect a predetermined buildup of a porcelain paste on a supported understructure; and a mallet member affixed to said handle and spaced longitudinally from said blade-like member; said mallet member being a mass of substantially cylindrical configuration and having its longitudinal axis the same as the longitudinal axis of said handle and of a radius grater than said handle and being adapted to



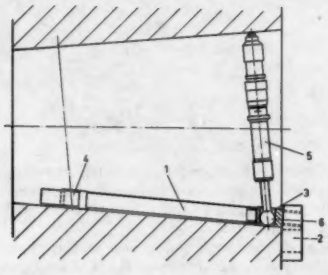
impart intermittently a tapping force to effect a vibratory action to the supported understructure during buildup of the porcelain paste thereon to induce a rate of condensation of the porcelain paste according to the stage in the buildup procedure; said handle being provided with an elongated roughened segment disposed intermediate said blade-like member and said mallet member, said roughened segment being adapted to impart vibrations to the supported understructure interchangeable with said mallet member subsequent to the predetermined buildup of the porcelain paste and upon the segment and the supported understructure being in contact and removable relative to one another longitudinally of the segment.

4,206,548

MEASURING TOOL FOR TAPER BORES

Per Bergman, Surte, Sweden, assignor to Aktiebolaget SKF, Gothenburg, Sweden

Filed Nov. 14, 1978, Ser. No. 960,669
Claims priority, application Sweden, Nov. 16, 1977, 7712914
Int. Cl.[2] G01B *5/24, 3/56, 3/18*
U.S. Cl. 33—174 E **4 Claims**



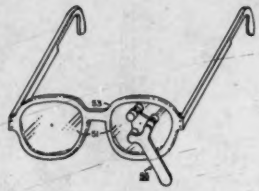
1. A measuring tool for taper bores comprising an elongated ruler member, at least one stop member at one end of said ruler member abutting the side plane of the taper bore forming an angle therewith corresponding to the conicity of the bore, means defining at least a pair of openings in said ruler member spaced apart a predetermined distance, a micrometer with a spherical tip at one end engageable in said opening to allow pivotal movement of said micrometer thereby to measure the distance perpendicularly to the surface of said taper at each opening in said ruler member, said measurements and the known distances from the spherical tip to the side plane and the distance between said openings permitting accurate calculation of taper bore diameter and conicity.

4,206,549

APPARATUS AND METHOD FOR MAKING OPHTHALMIC DETERMINATIONS

Eugene L. Gould, 206 Locust La., Kittanning, Pa. 16201

Filed Nov. 6, 1978, Ser. No. 958,121
Int. Cl.[2] A61B *3/10*
U.S. Cl. 33—200 **6 Claims**



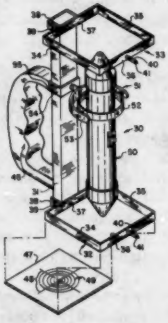
1. Apparatus for determining the position of the critical center of a spectacle lens for a patient with reference to its contour with the aid of a simulated lens of a contour similar to the contour of the spectacle lens, the said apparatus including a plate, a target mark on said plate, magnetic means for clamping said plate movably adjacent to one surface of said simulated lens, and means, connected to said plate, for moving said plate in engagement with said lens while said lens is fitted on said patient, to align the target mark with the pupil of an eye of the patient and thereby determine the point of the spectacle lens through which the visual axis passes thus to set the desired position with reference to the contour of said spectacle lens of the critical center, the said apparatus also including light emitting means for aligning said target mark with the pupil of said patient's eye, said light emitting means to be disposed remotely from said patient substantially aligned horizontally with the eye of said patient so that the light of said light emitting means is normally reflected by the corneal apex of said eye, the reflection being interrupted by said target mark when said target mark is aligned with said pupil.

4,206,550

POINT-TO-POINT SELF-PLUMBING APPARATUS AND METHOD

Vernon H. Boyett, 200 S. Delaware Ave. Apt. 2, San Mateo, Calif. 94401, and Robert W. Devine, 728 Alta Vista, Pacifica, Calif. 94044

Continuation-in-part of Ser. No. 712,868, Aug. 9, 1976, Pat. No. 4,106,207. This application Aug. 14, 1978, Ser. No. 933,517
Int. Cl.[2] G01C *15/02, 15/10*
U.S. Cl. 33—286 **19 Claims**



1. A point-to-point, self-plumbing apparatus comprising:
a source of a beam of light;
means including a cantilever member connected at one end

to a supporting member for supporting said source in a cantilever fashion; and

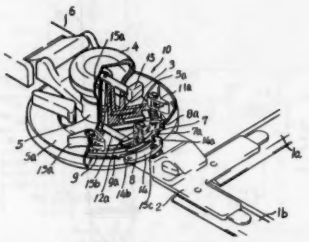
means coupling said source to the other end of said cantilever member for orientating said light beam pendulously in a self-plumbing manner.

4,206,551

UNIVERSAL PARALLEL RULER FOR THREE-DIMENSIONAL DRAWING

Youichi Matsugu, and Yoshitaka Gibu, both of Wakou, Japan, assignors to Asahi Seimitsu Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 19, 1978, Ser. No. 971,096
Claims priority, application Japan, Dec. 21, 1977, 52-154149
Int. Cl.² B43L *13/14*
U.S. Cl. 33—434 **10 Claims**



1. A universal parallel ruler having a plurality of scales attached thereto for use in drawings having a plurality of axes, comprising:

a head means operatively connected to said scales for guiding said scales of said ruler to the proper location on said drawing; and

a plurality of preset stopper means angle-adjustably mounted within said head means, all of said preset stopper means being provided for angularly adjusting said scales of said parallel ruler to a desired angle, one of said preset stopper means being angularly adjusted and fixedly set to a first desired angle, the remaining ones of said plurality of preset stopper means being angularly adjusted and fixedly set to desired angles different from said first desired angle;

whereby said desired angles may be adapted to correspond to the axes of a three-dimensional drawing.

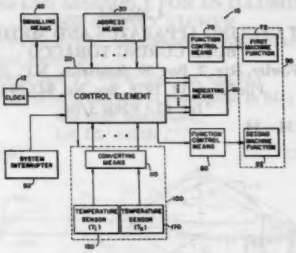
4,206,552

MEANS AND METHOD FOR CONTROLLING THE OPERATION OF A DRYING APPARATUS

Daniel I. Pomerantz, Lexington; Walter R. Spofford, Jr., Bedford, and Sanders Goldstein, Cambridge, all of Mass., assignors to Mallory Components Group Emhart Industries, Inc., Indianapolis, Ind.

Filed Apr. 28, 1978, Ser. No. 900,921
Int. Cl.² F26B *21/06*
U.S. Cl. 34—23 **34 Claims**

1. In a drying apparatus of the type which includes a compartment within which a load is dried, at least one machine function for providing a stream of heated air to said compartment, and means for venting a stream of moisture laden air from said compartment during a drying cycle of said apparatus, the improvement comprising: a programmable system for controlling at least one operation variable of said apparatus, said control system including a control element for processing a plurality of signals indicative of said operation variable in accordance with a control strategy, means for addressing said signals to said control element including at least one sensor thermally responsive to said stream of heated air and at least one sensor thermally responsive to said stream of moisture laden air for sensing a plurality of temperatures of said heated air and said moisture laden air, said control element determines a maximum temperature difference from a plurality of temperature differences between said heated air and said moisture laden air from which a final temperature difference is derived and in response to a decrease in said temperature differences



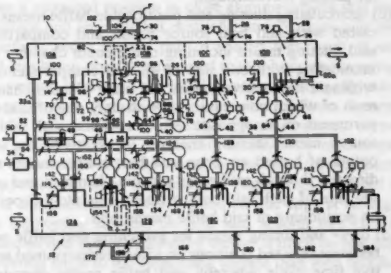
deactivates said machine function when said final temperature difference is achieved, and means responsive to said control element for activating and deactivating said machine function.

4,206,553

METHOD OF CURING STRIP COATING

Kenneth Ellison, 20 Avondale Cres., Markham, and Alan S. Whike, R.R. #1, Caledon East, both of Canada

Division of Ser. No. 732,165, Oct. 13, 1976, Pat. No. 4,140,467, which is a continuation-in-part of Ser. No. 585,198, Jun. 9, 1975, abandoned. This application Apr. 10, 1978, Ser. No. 894,824
Int. Cl.² F26B *3/04*
U.S. Cl. 34—28 **14 Claims**



1. A method for the heat treatment of a workpiece carrying a coating containing a vapourizable solvent, said solvent being oxidizable to provide at least part of the heat required for such heat treatment, and said method comprising the steps of:

continuously moving such a workpiece through a plurality of zones of an oven;

continuously circulating gases in a predetermined temperature range in such oven zones around such a workpiece to entrain vapourized solvents;

removing solvent-carrying gases from one of such oven zones;

transferring such solvent-carrying gases untreated and as removed from such an oven zone to the inlet of a solvent incinerator means disposed in a different one of such oven zones said incinerator having an outlet within such zone;

incinerating such solvent-carrying gases and oxidizing solvent vapours contained in such gases in said solvent incinerator and producing higher temperature incinerated gases, and

discharging all of such gases after incineration and at such elevated temperature and with a reduced solvent vapour content from said incinerator directly within said different

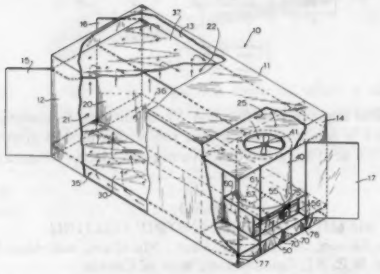
one of such oven zones, such discharged gases then mixing with oven gases circulating in that zone so as to maintain a stable solvent vapour content and operating temperature in that zone.

4,206,554

HEAT CYCLING APPARATUS AND METHOD FOR BULK CURING TOBACCO

Joe W. Fowler, Rte. 2, Box 39, Reidsville, N.C. 27320

Filed Sep. 18, 1978, Ser. No. 943,242
Int. Cl.[2] F26B *3/04*
U.S. Cl. 34—34 **10 Claims**



1. An apparatus for drying crop material, comprising:
(a) a drying barn having plural heating compartments and means to store the crop material therein distributed among said compartments;
(b) heat source means having means to heat and pressurize air passing therethrough;
(c) recirculating ducting and positionable baffle means associated with said heat source means and compartments, said ducting means including one plenum chamber communicating with one side of all said compartments and with said heat source means and other plenum chambers each of which communicates with only one of said compartments on an opposite side thereof and with said heat source means thereby enabling substantially the entire output of heated air from said heat source means to be directed through said other plenum chambers and opposite side of each said compartment separately dependent on positioning of said baffle means; and
(d) drive and timing means for switching said baffle means between selected positions on some predetermined repetitive time cycle whereby said baffle means operates to direct substantially the entire output of said heat source means to said other plenum chambers separately, successively and in a predetermined repetitive sequence and time cycle.

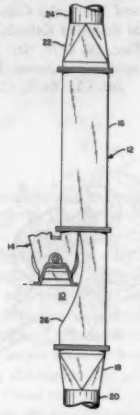
4,206,555

VENTURI DISPERSING FEEDER

Richard L. Musto, Homewood, Ill., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 12, 1979, Ser. No. 29,187
Int. Cl.[2] F26B *17/10*
U.S. Cl. 34—57 R **10 Claims**

1. In a system operative for effecting the drying of wet material by exposing the wet material to a stream of hot gases, the combination comprising:
a. conduit means having a stream of hot gases flowing therein, said conduit means having an opening formed therein providing access to the hot gas stream flowing through said conduit means; and
b. a Venturi dispersing feeder including a feeder body having a chamber therein, inlet means provided in said feeder body communicating with said chamber, said inlet means being connectable in fluid flow relation with a source of wet material for receiving wet material therefrom, outlet means provided in said feeder body communicating with said chamber, said outlet means being cooperatively associated with said opening in said conduit means for discharging wet material into the path of the hot gas stream flowing into said conduit means, rotor means supported for rotation within said chamber in said feeder body, blade means mounted for rotation on said rotor means, said



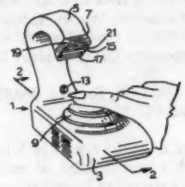
blade means being operative to effect the movement of the wet material through said chamber from said inlet means to said outlet means, and adjustment means cooperatively associated with said feeder body for adjusting the angle of discharge of the wet material from said outlet means through said opening into said conduit means and thereby relative to the path of flow of the hot gas stream in said conduit means.

4,206,556

NAIL POLISH MACHINE

Paul F. Sabo, and Margaret B. Spicer, both of 110 Nonquon Rd., Apt. 206, Oshawa, Ontario, Canada (L1G 3S4)

Filed Sep. 22, 1978, Ser. No. 944,792
Int. Cl.[2] F26B *19/00*; A45D *29/22*
U.S. Cl. 34—90 **2 Claims**



1. A device used for the application of fingernail polish and the like, said device comprising a housing, including a base portion and an upright portion; said upright portion being provided with a downwardly facing free end; said base portion being provided on its upper surface with a horizontally disposed finger pad rotatable in a generally horizontal plane and provided with a finger insert located below said downwardly facing free end; lighting means in said upright portion for providing direct illumination on said finger insert; fan means in said housing for blowing air through said downwardly facing free end at essentially right angles to said finger insert for

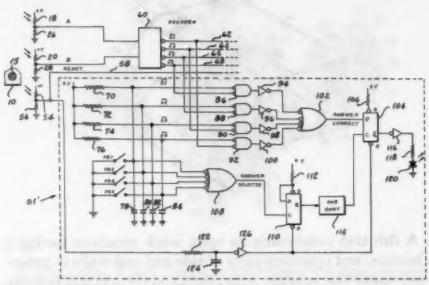
drying a polished fingernail and an air inlet in said housing for supplying air to said fan; said lighting means and said fan means being operable independently of one another; said finger insert being located centrally of said finger pad; such that it remains beneath the downwardly facing free end when rotating the finger pad for both polishing and drying the fingernail.

4,206,557

TEACHING SYSTEM EMPLOYING BINARY LIGHT-SENSITIVE RESPONDERS

Spencer S. Swinton, Morrisville, Pa., assignor to Educational Testing Service, Princeton, N.J.

Filed Jan. 27, 1978, Ser. No. 872,814
Int. Cl.[2] G09B 7/073
U.S. Cl. 35—9 B **4 Claims**



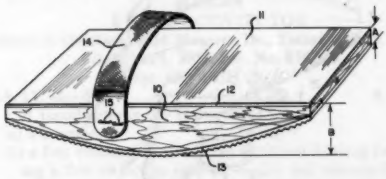
1. A teaching system including in combination means for providing a video display containing a multiple-choice question in readable form and the correct answer to said question in encoded form, said video display further indicating the beginning of an answering period, means optically responsive to said display for providing a first signal indicating the correct answer to said question and a second signal indicating the beginning of said answering period, user-actuated means for selecting a possible answer to said question, resettable means responsive to the momentary actuation of said selecting means to select an answer corresponding to said first signal for providing a continuing visual display indicating the selection of a correct answer, resettable means responsive to actuation of said selecting means for inhibiting the responsiveness of said display means to further actuation of said selecting means, and means responsive to said second signal for resetting said display means and said inhibiting means.

4,206,558

EXERCISE SHOES FOR SIMULATED JOGGING

Vincent J. Bivona, Hazlet, N.J., assignor to Vin-Lyn Enterprises, Inc., Edison, N.J.

Filed Oct. 10, 1978, Ser. No. 950,037
Int. Cl.[2] A63B 1/00; A43B 3/12
U.S. Cl. 36—7.5 **5 Claims**



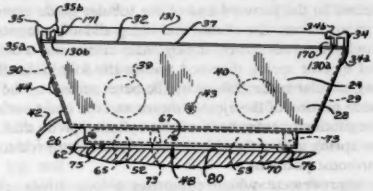
1. An exercise shoe for wear on a human foot during simulated jogging, comprising a foot support platform characterized by a substantially planar foot support surface; a bottom surface having a sharper than circular center portion smoothly leading to substantially linear regions extending to each end, for providing forward-breaking and backward-breaking motions during simulated jogging, and means for attaching said platform to such foot.

4,206,559

SUPPORTING LEG ASSEMBLY FOR AN ILLUMINATED TRANSPARENCY VIEWER

Donald J. Brown, Naperville, Ill., assignor to Knox Manufacturing Co., Wood Dale, Ill.

Filed Jan. 12, 1978, Ser. No. 868,983
The portion of the term of this patent subsequent to May 8, 1996, has been disclaimed.
Int. Cl.[2] G02B 27/02
U.S. Cl. 40—361 **15 Claims**



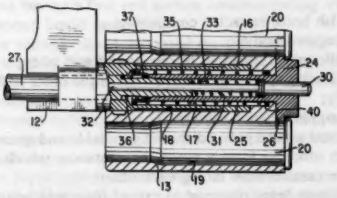
1. In combination with a transparency viewer provided with a housing formed of peripheral side walls closed by a bottom surface and a top translucent viewing surface with front and rear edges and having illuminating means within the housing for lighting said translucent surface, a leg construction for adjustably orienting the viewer on a supporting surface comprising: a first pair of spaced legs, each of said first legs being pivotally mounted to said housing for swinging movement between a retracted position in close alignment with said bottom surface and an extended position outward from said bottom surface; and a second pair of spaced legs, each of said second legs being pivotally mounted to said housing for swinging movement between a retracted position in close alignment with said bottom surface and an extended position outward from said bottom surface, whereby said transparency viewer may be positioned on the supporting surface with neither pair of legs extended so that said transparency viewer lies adjacent the supporting surface, with said first pair of legs extended so that the transparency viewer is tilted on one edge at an angle to the supporting surface, or with said second pair of legs extended so that said transparency viewer is tilted on one edge at a different angle to the supporting surface than with said first pair of legs extended.

4,206,560

LONG STROKE EJECTOR FOR A REVOLVER

Harry H. Sefried, II, New Haven, Conn., assignor to Sturm, Ruger & Co., Inc., Southport, Conn.

Filed Nov. 14, 1978, Ser. No. 960,615
Int. Cl.[2] F41C 1/00
U.S. Cl. 42—68 **6 Claims**



1. In a revolver having a frame, a cylinder crane pivotally

mounted on the frame, said cylinder crane having a rearwardly extending cylinder pivot shaft that is formed with a longitudinally extending center bore, a cylinder rotatably mounted on the cylinder pivot shaft of the cylinder crane, said cylinder being formed with a plurality of cartridge receiving chambers, ejector means mounted for longitudinal movement in the longitudinal center bore of the cylinder and cylinder pivot shaft, said ejector means having a cartridge ejector portion for engaging the rims of cartridges contained in the chambers of the cylinder and a generally tubular ejector guide portion slidably mounted on the rearward end of the cylinder and extending forwardly into the longitudinal center bore at the cylinder pivot shaft, said ejector means being movable longitudinally from its forwardmost cartridge receiving position to its rearwardmost cartridge ejection position, an ejector push rod connected to the forward end of the tubular guide portion of the ejector means, the ejector rod being slidably mounted for longitudinal movement on the cylinder crane, and a helically wound ejector spring disposed within the longitudinally extending annular space defined by the outer surface of the tubular guide portion of the ejector means and the inner surface of the longitudinal center bore of the cylinder pivot shaft, said ejector spring urging the ejector means and ejector rod to their forwardmost positions,

the improvement which comprises a long stroke ejector having a telescoping ejector spring, said ejector spring having an outer ejector spring section disposed within the annular space defined by the outer surface of the tubular guide portion of the ejector means and the inner surface of the center bore of the cylinder pivot shaft, an inner ejector spring section the outside diameter of which is less then the inside diameter of the outer ejector spring section, said inner ejector spring section being disposed on the rearward end of the ejector rod, and ejector spring connector means connecting the forward end of the outer ejector spring section to the rearward end of the inner ejector spring section, the inner ejector spring section being disposed generally forwardly of the outer ejector spring section when the ejector means is at its forwardmost position and being disposed within the forward end of the outer ejector spring section when the ejector means is at its rearwardmost position.

4,206,561

FISH HOOK EXTRACTOR

Willie Wong, 14407 S. Pioneer Blvd.; Jack Wong, 12125 Front St., and Yit C. Wong, 11618 Harverd Dr., all of Norwalk, Calif. 90650

Filed Nov. 20, 1978, Ser. No. 962,124
Int. Cl.² A01K *97/00*
U.S. Cl. 43—53.5 **4 Claims**

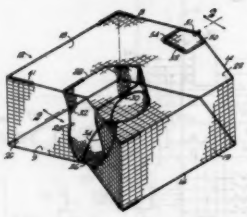
1. A fish hook extractor comprising:
an elongated body;
a handle means attached to one end of said body;
a fish hook gripping means attached to the other end of said body;
said gripping means having:
a first and second prong disposed parallel to and spaced from each other to form a space therebetween which prongs have parallel sides facing each other;
said prongs being disposed to extend from said body;
said body having a semi-cylindrical surface disposed between said prongs so that the diameter of said semi-cylindrical surface is the same as the space between said prongs;
a pair of opposing counter-sunk conical surfaces formed on said gripping means and coaxial with said semi-cylindrical surface.

4,206,562

FISH TRAP

Leonel Quevedo, 340 E. 2nd St. Hia. Apt. #3, Hialeah, Fla. 33010

Filed Sep. 25, 1978, Ser. No. 945,451
Int. Cl.² A01K *71/00*
U.S. Cl. 43—102 **3 Claims**



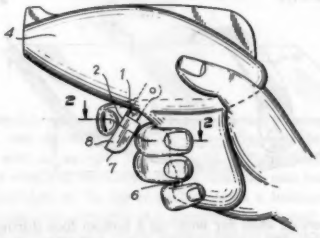
1. A fish trap comprising an open work structure having a top, bottom, and opposing pairs of side and end walls in generally perpendicular relation with respect to the top and bottom, with an opening in one of the end walls, and a first guide suspended in the trap and said guide having a mouth bounding the opening, said guide defining an upwardly converging path beneath the top and including a ramp surface and spaced guide walls along the ramp and interconnecting the ramp and trap top, said ramp and guide walls comprising interconnected loops of wire and said ramp terminating at an opening in the guide bounded by said guide walls, said opening being generally in a horizontal plane and confronting the bottom of the trap, said opening being spaced from the top, bottom and side walls within the trap; said openwork structure of said trap being composed of wire mesh material; said trap including a peripheral rod frame; and said trap including a trap door including keeper means for maintaining the trap door in a normal closed position.

4,206,563

TRIGGER GUARD FOR TOY

Richard Baldassarre, and James Graves, both of York, Pa., assignors to McCrory Corporation, York, Pa.

Filed Jun. 1, 1978, Ser. No. 911,341
Int. Cl.² A63H *1/00, 3/18*
U.S. Cl. 46—1 E **7 Claims**



1. In a toy employing a depending trigger and a depending grip, said trigger substantially parallel to said grip and having a gripping side adapted to receive a finger and an opening

rearwardly of said gripping side, the improvement comprising a smooth, reawardly-facing guard having a smooth surface covering said opening whereby said guard is adapted to contact a portion of the hand holding said grip when said trigger is pulled, and to urge said portion out from between said trigger and said grip.

4,206,564

ARTICULATED RECONFIGURABLE ROBOT DOLL

Iwakichi Ogawa, Kashiwa, Japan, assignor to Takara Co., Ltd., Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,301
Int. Cl.[2] A63H *3/12, 3/46, 17/00*
U.S. Cl. 46—22 **27 Claims**

1. A humanoid doll assembly simulating a robot, the assembly comprising:

a trunk portion;

a first member configured to simulate approximately a head and appropriately positioned on the trunk portion;

a base assembly attached to and supporting the trunk portion;

at least one second member removably mounted on the trunk portion and configured to simulate an arm appendage of the humanoid doll, the arm appendage further configured to include a first portion simulating the chest of a smaller humanoid figure and a second portion articulately connected to the first portion and configured to simulate the legs of the humanoid figure, the second portion comprising a pair of approximately parallel jointed extensions;

a third member configured and sized to simulate a head for the humanoid figure;

a fourth member configured and sized to simulate the arms of the humanoid figure, and

means on the second member for connecting the third member head and fourth member arm whereby when the second member is separated from the trunk portion it can receive the third member head and fourth member arms to provide the separate smaller humanoid figure as a subassembly toy.

4,206,565

LIQUID ACTIVITY TOY

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356

Filed Feb. 9, 1978, Ser. No. 876,365
Int. Cl.[2] A63H *29/10*
U.S. Cl. 46—41 **9 Claims**

1. A liquid activity toy comprising:

(a) a housing,

(b) a first mechanism associated with said housing for causing a first object to shift upwardly and outwardly with respect to said housing and retractable back with respect to said housing, said first mechanism comprising:

(1) a first reservoir on said housing for receiving a liquid,

(2) a first discharge opening on said first reservoir permitting the liquid therein to discharge therefrom at a relatively slow rate,

(3) an arm shiftably mounted within said housing and capable of being shifted from a first position to a second position,

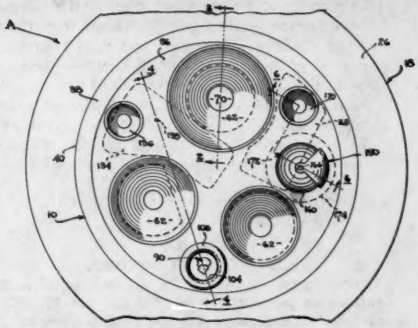
(4) pivot means in said housing supporting said arm and permitting said arm to shift between said first and second positions,

(5) a container pivotally mounted on one end of said arm in generally vertical alignment with the discharge of said reservoir to receive the liquid therefrom, said arm being located in a first position where the container is located in an upwardly disposed position and said container causes said arm to shift to a second position when the container is disposed in a downwardly disposed position when a certain weight of the liquid has been introduced into said container,

(6) an opening in an upper portion of said housing spaced apart from the first reservoir for permitting a first object to pass therethrough and thereby permit shifting from a position inwardly of said housing to a position outwardly of said housing,

(7) a generally vertically disposed post operatively connected to said arm and being located on the opposite side of said pivot means with respect to said container and being located in vertical alignment with said opening, and

(8) a said first object carried by said post at the upper end thereof and capable of being shifted from a position inwardly of said housing to a position outwardly of said



housing when said arm has been shifted to the second position, said container having a shape such that it will pivot when said arm has been shifted to the second position thereby causing the liquid to discharge from the container and thereby permitting the arm to shift back to the first position by the weight of the post and the first object;

(c) a second mechanism for causing a second object to shift outwardly with respect to said housing and rectractable back with respect to said housing, said second mechanism comprising:

(1) a second liquid reservoir located with respect to said second object,

(2) a vertically shiftable member located with said housing and having a first end section communicating with said second liquid reservoir,

(3) a second object mounted on the upper end of said vertically shiftable member and capable of being moved from a lower position with respect to said housing to a position upwardly and beyond said housing,

(4) means defining a liquid duct in said shiftable member,

(5) an end section on said shiftable member located within said second reservoir,

(6) a liquid introduction means on an end section of said shiftable member in common-section with said duct for introducing a liquid into said second liquid reservoir in amounts to entrap air with respect to said first end

section and thereby buoy said shiftable member and said second object with respect to said housing, and

(7) a second discharge opening located on said second reservoir and permitting the liquid to discharge therefrom at a relatively slow rate to permit discharge of liquid from said second reservoir to permit the resultant shifting of said shiftable member and second object back from its outwardly shifted position for a period of time after introduction of liquid into said second reservoir, said shiftable member starting its shiftable movement back toward said housing almost simultaneously with the cessation of introducing liquid into the second reservoir, and thereafter the shiftable member is permitted to stop movement when the liquid is substantially drained from said second reservoir;

(d) a third mechanism associated with said housing for causing a third object to rotate with respect to said housing, said third mechanism comprising:

(1) a third reservoir on said housing for receiving a liquid,

(2) a third discharge opening on said third reservoir permitting the liquid therein to discharge therefrom at a relatively slow rate,

(3) a rotatable shaft in said housing spaced apart from said third reservoir,

(4) a third object located outwardly of said housing on the upper end of said rotatable shaft and being rotatable therewith, and

(5) a plurality of blades on said rotatable shaft located to be contacted by the liquid discharged from the third liquid discharge opening on said third reservoir, the number of blades and the positions thereof being sufficient to cause said rotatable shaft, and said third object to rotate rapidly when the liquid impings upon the blades, said third discharge opening permitting the liquid to discharge therefrom for a period of time after introduction of liquid into said third reservoir.

4,206,566

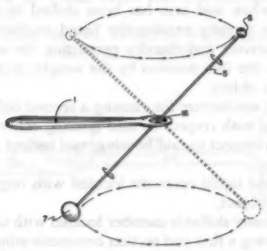
TOY NOVELTY DEVICE

Fred L. Churchman, 451 Maxine Dr., Baton Rouge, La. 70808

Continuation-in-part of Ser. No. 810,315, Jun. 27, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,339

Int. Cl.[2] A63H *33/00*

U.S. Cl. 46—47 **9 Claims**



1. A toy novelty device comprising:

(a) a hand-held elongated handle having an opening located in one end of said handle; and

(b) an orbiting rod having an elongated straight, round shaft having a diameter sufficiently small to pass through said opening, said shaft having weight means attached at opposite ends of said shaft, at least one of said weight means being shaped to pass through said opening, said rod being positioned in said opening to achieve a dual conical pendulum motion when rotated about said opening.

4,206,567

COMBINATION FIGURE TOY AND TOY BIN

Edith E. Cieslak, 3310 N. Main St., Soquel, Calif. 95073

Filed Jun. 5, 1978, Ser. No. 848,341

Int. Cl.[2] A63H *3/00*

U.S. Cl. 46—116 **1 Claim**

1. A mother doll figure representing a species of mammal, said figure having a torso, a hollow interior in the lower portion of said torso said torso having a front opening communicating with said hollow interior, a removable toy bin receivable in said hollow interior, said bin having a floor and four upstanding walls, one of said walls closing said opening and forming a portion of an exterior surface of said figure when the bin is fully received in said hollow interior, said surface portion having an outwardly projecting knob secured thereon, said toy bin floor having a series of through holes therein, said bin being of a size to contain at least one baby doll representing the same species as said mother doll, and said holes being arranged in such a manner that they may be used to practice lacing and also to secure said baby doll in said bin by means of a lace.

4,206,568

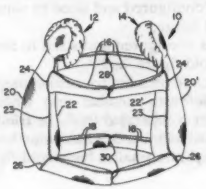
JOINED DOLLS

Janet S. Garner, 1306 Delmar, Midland, Tex. 79701

Continuation of Ser. No. 710,692, Aug. 2, 1976, abandoned. This application May 9, 1978, Ser. No. 904,160

Int. Cl.[2] A63H *3/12*

U.S. Cl. 46—153 **4 Claims**



1. A pair of joined rag dolls, each of said dolls having a torso, head, arms, and legs; means, including sewing, by which said arms are joined to said torso to provide relative movement at a location where the arms and torso are interconnected;

means, including stitching, by which said legs are joined to said torso to provide relative movement at a location where the legs and torso are interconnected;

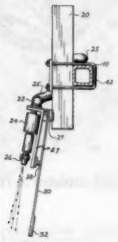
said dolls are arranged in face-to-face relationship to provide for immediacy of said dolls; with there being but two of said dolls;

the extremities of said legs being interconnected by sewing to provide relative movement along the interconnected legs; and, the extremities of said arms being interconnected by sewing to provide relative movement along the interconnected arms;

said dolls are stuffed rag dolls with said legs and arms being

formed by a covering which is sewed to provide an interior which can be stuffed with rag-like material.

4,206,569
WEED SPRAYER
Joe G. Randolph, Rte. 1, Shallowater, Tex. 79363
Filed Sep. 5, 1978, Ser. No. 939,807
Int. Cl.[2] B05B *12/00*
U.S. Cl. 47—1.7 **5 Claims**

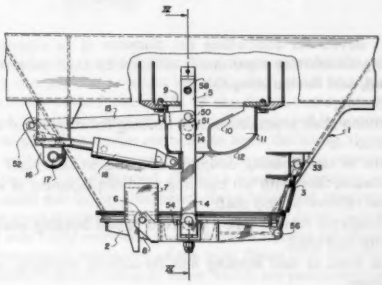


1. In a tractor having
a. a tool bar behind it, and
b. a plurality of cultivators attached to the tool bar,
c. spaces between some of the cultivator such that a growing crop is not plowed up;
the improvement comprising in combination with the above:
d. a clamp on the tool bar at the space between cultivators above the growing crop,
e. a spray shank adjustably clamped to the tool bar by the clamp,
f. a flexible hose forming a source of herbicide extending along the tool bar,
g. a solenoid valve structurally attached to the spray shank and fluidly connected to the flexible hose,
h. a spray nozzle immediately below and structurally and fluidly connected to the solenoid valve,
j. sensing means on the spray shank for sensing a weed above the height of the crop, and
k. activating means interconnecting the sensing means and solenoid valve for activating the valve responsive to a weed being sensed.

4,206,570
DEVICE FOR SUPPORTING A VESSEL
William E. Cooper, 2821 Mynatt Dr., Knoxville, Tenn. 37901
Filed Apr. 17, 1978, Ser. No. 896,737
Int. Cl.[2] A47B *91/00*
U.S. Cl. 47—71 **4 Claims**

1. A protective device for supporting a vessel and containing liquid draining from said vessel, said device providing protection to furniture, shelving or other supporting structures on which the vessel may be set to avoid physical scratches and liquid staining or marring comprising:
a liquid impervious structure comprising a substantially flat member, and a rim member surrounding the perimeter of said flat member to provide sides suitable for containing a liquid, said rim member further including an edge for clamping; and
a layer of absorbent and compressible material within said rim member and having a plane parallel and coextensive with said flat member, said layer of absorbent material being secured to said rim member and positively gripped by said edge for clamping such that excess liquid draining onto said protective device which is not absorbed by said layer of absorbent material is contained by said rim member and
means which is parallel and has a plane coextensive with said flat member and said layer of absorbent material, and which is located between said flat member and said absorbent layer to provide spacing therebetween.

4,206,571
BUNKER CLOSURE DOOR OPERATING MECHANISM
Rolf Kramer, Siegen; Felix Schneider, and Gerhard Kampmann, both of Netphen, all of Fed. Rep. of Germany, assignors to Waggon Union GmbH, Fed. Rep. of Germany
Filed Mar. 31, 1978, Ser. No. 892,072
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714860
Int. Cl.[2] B60P *1/56*; B61D *7/18, 7/28*
U.S. Cl. 49—340 **5 Claims**



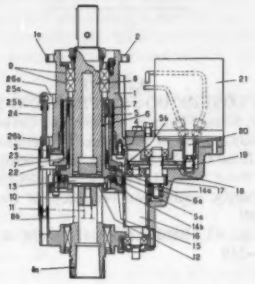
1. A bunker closure door mechanism, for a bunker having a housing with an opening for the discharge of material, and with a seat around the opening, comprising, a closure door body adapted to be engaged on the seat to close the opening, first and second spaced apart end levers each having one end pivotally connected to the bunker housing and having an opposite end pivotally connected to said door body at respective sides and adjacent one end of said door body, guide means on said housing defining a stabilizing guideway to control operation of the closure door, first and second central levers each having one end pivotally connected to said door body adjacent respective sides thereof and intermediate the length of said door body and having respective opposite ends, first and second toggle levers each having one end pivotally connected to the housing and an opposite end pivotally connected to the respective ends of said central levers, actuator means pivotally connected to said central levers intermediate their lengths to pivot said central levers about their connections to said toggle levers, guide pin means on said door body between the pivotal connection of said central levers to said door body and the end of said door body which is opposite to the connections of said end levers to said door body, said guide pin means being engageable in said guideway, during opening of said door body by said actuator means, whereby, in the initial stage, said pins hold said door body against lateral movement and permit the lowering thereof, said toggle levers being pivoted by said actuator means beyond the top dead center position thereof to permit downward movement of said door body, further movement of said actuator means being effective to move said central levers with said door body to one side of the housing.

4,206,572

DEVICE FOR CONTROLLING EXPANSIBLE GRINDING TOOLS

Jack F. Delehonte, Savigny sur Orge, France, assignor to S.A. Automobiles Citroen and Societe Dites Automobiles Peugeot, both of Paris, France

Filed Jul. 25, 1978, Ser. No. 927,870
Claims priority, application France, Jul. 29, 1977, 77 25488
Int. Cl.[2] B24B *33/00*
U.S. Cl. 51—34 H 3 Claims



1. A device for controlling the diameter of an expansible grinding tool whose expansion is effected by axial movement of a rod, said device comprising:

a housing;

a driving shaft journaled in said housing for rotation of said tool;

means in said housing coupling said rod to said shaft for rotation therewith but enabling axial displacement of said rod relative to said shaft;

an elongated tubular screw received in said housing coaxial with said shaft;

a nut fixed in said housing and threadedly engaging said screw;

a driving motor mounted on said housing laterally of said shaft and said screw;

gearing interconnecting said drive motor and said screw for rotation of said screw by said motor, said screw having a toothed crown and said gearing including an elongated output gear having an axis parallel to that of the shaft and the screw and laterally spaced from said shaft but meshing with said crown; and

means operatively connecting said screw with said rod at said coupling means for transmitting axial movement of said screw to said rod, said shaft being rotatable relative to said screw in said housing.

4,206,573

TUMBLING APPARATUS

Walter W. Hayward, 1805 Ponderosa Pl., Loveland, Colo. 80537

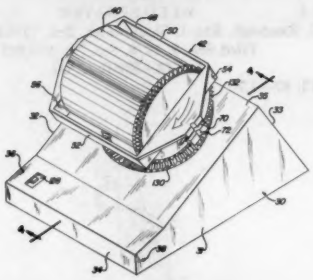
Continuation of Ser. No. 680,219, Apr. 26, 1976, abandoned.
This application Jan. 2, 1979, Ser. No. 579
Int. Cl.[2] B24B *31/02*
U.S. Cl. 51—164.1 35 Claims

1. Tumbling apparatus comprising:

a generally-cylindrical canister having a longitudinal axis and a transverse axis intersecting said longitudinal axis at a right angle thereto;

means for mounting said canister to revolve around said longitudinal axis;

means for adjusting the orientation of said longitudinal axis between a first position wherein said longitudinal axis remains in a horizontal plane as said canister revolves about said longitudinal axis and a second position wherein said longitudinal axis wobbles relative to said plane as said canister so revolves;



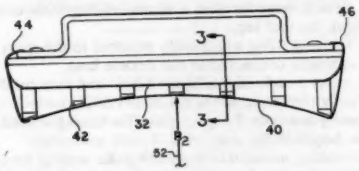
and means for driving said canister in revolution around said longitudinal axis.

4,206,574

LAPPING BLOCK FOR CURVED SURFACES

Martin Dotsko, Binghamton, N.Y., assignor to The Singer Company, Binghamton, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,808
Int. Cl.[2] B24D *15/00*
U.S. Cl. 51—363 6 Claims



1. Apparatus for use in preparing a surface of a work piece comprising:

a support member having a size suitable for being controlled and operated manually, said support member including an upper surface having means suitable for grasping said support member by said operator and a lower surface substantially parallel to said upper surface;

a multiplicity of dowels having first and second ends, said first ends of each of said dowels being fixedly attached substantially perpendicular to said lower surface of said support member in a selected pattern;

a multiplicity of pads, each having a first and second surface, the first surface of each of said pads secured to said second end of each of said dowels, the length of said dowels and the thickness of said pads between said first and second surfaces being selected to have a combined length such that said second surfaces of said pads define a selected surface; and

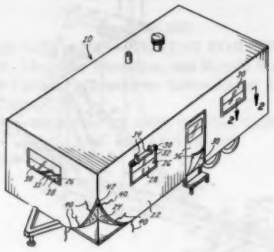
a sheet of working material having a working side and a back side secured to said support member and positioned to cover said second surfaces of said pads such that when said back side is in contact with said second surafces of each of said pads, resilience is provided between said sheet of working material and said dowels, and said working side of said sheet also defines said selected surface, said selected surface defined by said working side of said sheet of working material suitable for contacting and preparing said workpiece.

4,206,575

ENERGY SAVING COVER FOR MOBILE HOME

Marvin L. Leonard, Rte. 2, Hillsboro, Mo. 63050

Filed Sep. 18, 1978, Ser. No. 942,999
Int. Cl.[2] E04B *1/34*
U.S. Cl. 52—3 10 Claims



1. A weatherproof protective cover adapted to protect a mobile home comprising an outer layer of weatherproof material, sand layer sized to fit snugly around and enclose the roof and sidewalls of a mobile home, means defining openings through said cover to permit the unrestricted opening and closing of windows and doors therethrough, means for fastening said cover to the mobile home about the periphery of said openings, and means to secure said cover to the mobile home to prevent relative movement therebetween.

4,206,576

WOOD DESK TOP

Fredrick J. Walz, Kentwood, Mich., assignor to Steelcase Inc., Grand Rapids, Mich.

Filed Nov. 16, 1978, Ser. No. 961,039
Int. Cl.[2] E04G *23/00*
U.S. Cl. 52—291 19 Claims

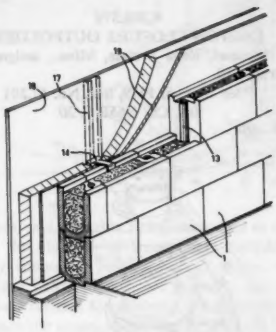
1. In a desk top assembly including a top and a top prestressing device, the improvement comprising: said prestressing device comprising a bar made of a substantially rigid material having a certain degree of resiliency and having an upper surface which from one end of the bar to the other is slightly convex to define a crown generally at the central portion of the bar; said top including a groove in its bottom surface, said groove being at least as long and as wide as said bar and having an upper surface which is generally linear such that when said crown of said bar is abutting said upper surface of said groove, with said bar under no stress, the upper surfaces of the end portions of said bar are spaced from said upper surface of said groove; said bar being located in said groove with said crown abutting said upper surface of said groove; means biasing said end portions of said bar and said upper surface of said groove towards abutment with one another to thereby bias said top towards a convex configuration.

4,206,577

REFRACTORY LINING ELEMENT FOR A FURNACE OR THE LIKE

Marcel Moriez, Palaiseau, and Jacques Delobel, Paris, both of France, assignors to Societe Europeene des Produits Refractories, Neuilly sur Seine, France

Filed Jun. 5, 1978, Ser. No. 912,326
Claims priority, application France, Jun. 17, 1977, 77 18679
Int. Cl.[2] E04B *2/00*
U.S. Cl. 52—405 5 Claims



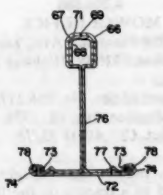
1. Refractory lining element for a furnace or the like, comprising two parallel principal walls of which one is arranged to be directed toward the inside of the furnace and the other toward the outside, and small side walls arranged to cooperate with neighboring similar elements to form the lining, the principal walls and two opposite small side walls being constituted of a rigid material formed of fibers bonded together, and a third small side being constituted of rigid material, thus providing an open-topped structure, filled with bulk fibers, said third small side being provided to constitute a bottom which resists the downward movement of the bulk fibers from a vertically positioned element towards those which are positioned below it, and said bottom having a projection designed to be set in the open top of the elements placed below it, in order to prevent any relative movement of these elements towards the inside or the outside of the furnace.

4,206,578

GRID TEE FOR SUSPENSION CEILINGS OR THE LIKE

David F. Mieyal, Strongsville, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Filed Jul. 31, 1978, Ser. No. 929,281
Int. Cl.[2] E04B *5/52*
U.S. Cl. 52—730 26 Claims



1. An elongated grid tee for suspension ceilings or the like having a web, a bulb, and oppositely extending flanges comprising a first elongated strip of thin metal bent along its center to provide a closed bulb and extending from said bulb in face-to-face abutting adjacency to provide a central web having two abutting layers and at the edge of said web remote from said bulb bent to provide oppositely extending flanges, a cap

formed of a separate second strip of thin metal secured to and extending along substantially the entire length of said flanges on the side thereof remote from said bulb, and a stiffener formed of a separate third strip of metal enclosed within said bulb, a substantial portion of said stiffener engaging the surface of said bulb so that said stiffener and the material of said bulb cooperate to provide a substantially unitary structure, said stiffener and cap increasing the material at the extremities of said tee without increasing the thickness of said web.

4,206,579

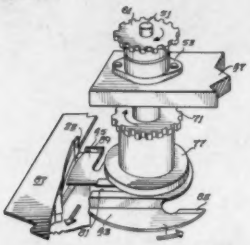
CARTON CLOSURE OUTFOLDER

Robert J. Woxland, Eden Prairie, Minn., assignor to Paxall, Inc., Chicago, Ill.

Filed Mar. 5, 1979, Ser. No. 17,391

Int. Cl.[2] B65B *7/20*

U.S. Cl. 53—484 **9 Claims**



6. A method for automatically folding the end closure of a carton of rectangular cross section which end closure includes a major panel hinged to one sidewall of the carton and a pair of flanking gusset panels which are each respectively hinged to one edge of the major panel and to another adjacent sidewall of the carton, which method comprises

continuously moving said carton along a predetermined straight-line path, with one of the gusset panels leading and the other gusset panel trailing, past an outfolding station at a predetermined rate of speed,

rotating a first arm in one direction so that a radially outer section thereof intersects said predetermined path and contacts the leading gusset panel while moving at a rate of speed greater than said predetermined rate so as to outfold the leading gusset panel along a line at an angle to its hinged edges and

rotating a second arm in an opposite direction so that a radially outer section of the second arm intersects said predetermined path, contacts the trailing gusset panel and folds it outward along a line at an angle to its hinged edges.

4,206,580

MOWER DEVICE

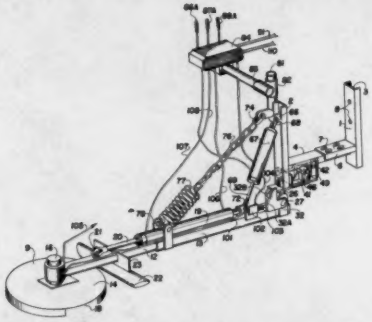
Clarence E. Truax, 3918 Farmview Ave., Louisville, Ky. 40202, and Michael E. Tuskos, 5719 W. Highway 22, Crestwood, Ky. 40014

Continuation-in-part of Ser. No. 856,277, Dec. 1, 1977, abandoned. This application Aug. 11, 1978, Ser. No. 932,911

Int. Cl.[2] A01D *75/18*

U.S. Cl. 56—10.4 **25 Claims**

1. A relatively low profile, light weight, versatile mower device to be attached to a tractor or the like for movement therewith to cut grass, brush, or the like, comprising an elongate generally straight outrigger assembly, including extensible-retractible arm means for carrying a mower assembly adjacent a relatively outermost end thereof; motive means for extending and retracting said arm means and thereby to move such mower assembly relative to such tractor; outrigger assembly retaining bracket means securable to such tractor at a relatively low location on the latter for supporting said outrigger assembly at a relatively innermost end thereof from such tractor with said arm means extending generally laterally outwardly from such tractor; and first pivot means located at a relatively low location with respect to the tractor body for connecting said outrigger assembly to said bracket means to



permit said arm means selectively to pivot in a vertical plane to position said mower means at selected attitude relative to horizontal, said motive means including means for extending and retracting said arm means in a substantially straight direction from the location at which said outrigger assembly is supported on said bracket means.

4,206,581

CORN HARVESTER

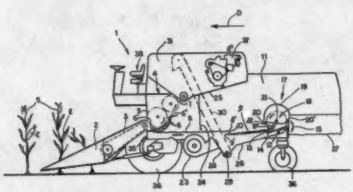
Hinrich Haake, Ahrensburg; Michael Stampfer; Hubert Meier, both of Gottmadingen; Reimar Franke, Dillingen; Hans-Jürgen Dalmer, Lauingen; Ernst Ott, Wittislingen, and Josef Kienle, Lauingen, all of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG (Zweigniederlassung Fahr), Gottmadingen, Fed. Rep. of Germany

Filed Oct. 27, 1978, Ser. No. 955,150

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1978, 2817174

Int. Cl.[2] A01D *45/02*

U.S. Cl. 56—14.6 **18 Claims**



1. A corn harvester comprising:

a chassis adapted to travel along the ground;

means on the front of said chassis for picking ears off cornstalks;

means on said chassis for reducing said ears to fragments including pieces of cob, corn kernels, and pieces of husk, and for displacing said fragments backwardly;

a riddle on said chassis positioned to receive said fragments at least indirectly from the reducing means and having a rear edge;

a first comb on said chassis spaced by a gap below said rear edge of said riddle;

means for displacing said riddle and for moving said fragments backwardly with a portion of the smaller and denser fragments falling through said riddle and the rest of said fragments falling across said gap onto said first comb;

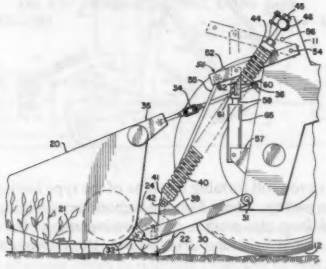
a second comb on said chassis meshable with said first comb;
means for displacing said second comb through said first comb and thereby separating said husk pieces from the rest of said fragments on said comb and for displacing the separated husk pieces away from said comb; and
means underneath said riddle and said comb for catching the fragments passing through same.

4,206,582

HEADER LIFT ARRANGEMENT FOR WINDROWERS

Herbert W. Molzahn, Hamilton, and Ronald Stowell, Oakville, both of Canada, assignors to International Harvester Company, Chicago, Ill.

Filed Feb. 12, 1979, Ser. No. 11,351
Int. Cl.[2] A01D *67/00*
U.S. Cl. 56—15.8 **2 Claims**



1. A windrower comprising:
a mobile main frame, said main frame including a source of hydraulic power and control valve means therefor;
a laterally elongated crop cutting header disposed forwardly of said main frame, said header including a crop cutting means and ground engageable means for gauging the distance of said cutting means above the ground;
linkage means for connecting said header to said frame including a pair of laterally spaced lower suspension links and an upper stabilizing link means, said linkage means being pivotally connected at their respective ends to said frame and said header in such a manner as to permit radial flotation of said header relative to said frame;
a pair of laterally spaced lifting linkages for lifting the respective lower suspension links, each of said linkages including an upper lift arm pivoted on said main frame, a fixed length lift link pivoted on said lift arm and on said respective lower suspension link, a hydraulic cylinder having its body pivotally connected to said frame, and an adapter pivoted to said upper lift arm and having an axially acting lost motion compression coupling with the rod end of said cylinder;
said hydraulic cylinder in one of said lifting linkages being a master cylinder having an inlet port hydraulically connected to said control valve and said hydraulic cylinder in the other of said lifting linkages being a slave cylinder having an inlet port connected to the outlet port of said master cylinder.

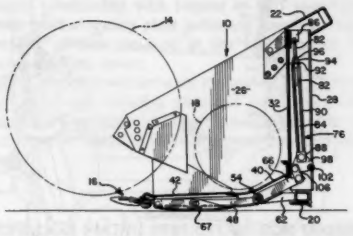
4,206,583

CUTTERBAR FLOATATION SYSTEM

Robert D. Week, Bloomington, Minn.; Orlin W. Johnson, East Moline, Ill., and Dathan R. Kerber, Bettendorf, Iowa, assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 939,002
Int. Cl.[2] A01D *47/00*
U.S. Cl. 56—15.8 **6 Claims**

1. A harvesting header for a mobile harvesting machine comprising:
a header frame;
a cutterbar movably mounted on said frame to follow variable ground profile;
and means including a spring for maintaining a substantially constant counterbalancing force on said cutterbar despite variations in the spring force throughout the cutterbar



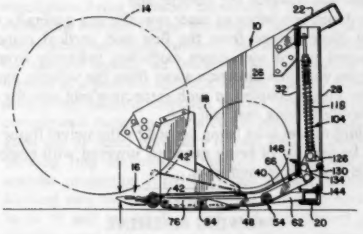
movement, said cutterbar being connected to the forward ends of the plurality of fore-and-aft extending runners pivotally supported on said header frame, said means including a linkage interposed between said spring and one of said runners for applying a mechanical advantage to maintain the counterbalancing force as the spring force varies.

4,206,584

FLOATING CUTTERBAR HEADER

Orlin W. Johnson, East Moline, Ill., and Dathan R. Kerber, Bettendorf, Iowa, assignors to International Harvester Company, Chicago, Ill.

Filed Sep. 1, 1978, Ser. No. 939,003
Int. Cl.[2] A01D *47/00*
U.S. Cl. 56—15.8 **21 Claims**



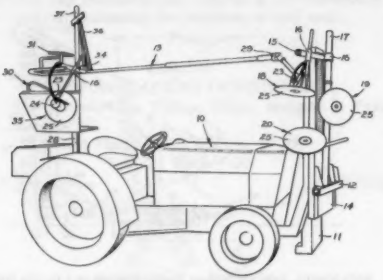
1. A harvesting header for a mobile harvesting machine, comprising:
a header frame;
a floating cutterbar for cutting a standing crop;
means mounting the cutterbar on the header frame for vertical movement relative thereto to accommodate variable ground contour, said means including a plurality of transversely spaced fore-and-aft extending runners connected to said cutterbar and pivotally mounted on said header frame, said runners having ends accessible at the rear of the header frame, said ends being movable up and down in response to cutterbar movement;
and adjustable means operable upon the accessible ends of at least one of the runners for selectively limiting the range of movement of the cutterbar, said adjustable means including a pair of stop elements effective respectively to limit upward and downward movement of a runner, and further including means for adjusting the effective movement-limiting position of each of said stop elements.

4,206,585

VINE PRUNING MEANS AND METHOD

John R. Pollock, Silver City Hwy., Buronga, New South Wales, Australia

Filed Aug. 18, 1978, Ser. No. 934,872
Int. Cl.[2] A01D 55/18
U.S. Cl. 56—235 6 Claims



1. Means for the pruning of canes from vines which are supported by trellis wires carried by posts, comprising:

a frame assembly having a main frame, a swivel frame, and pivot means connecting the swivel frame to the main frame for swivel movement of the swivel frame with respect to the main frame in at least a vertical plane,

securing means on the main frame for securing the frame assembly to a vehicle, and height adjustment means operatively located between the frame assembly and the vehicle for adjusting the height of the frame assembly with respect to the ground,

at least three saws carried by the frame assembly:

a first said saw being an upper saw carried on the main frame to lie in a generally horizontal plane arranged to cut vine canes extending upwardly from the trellis wire;

a second said saw being an outer saw carried on the main frame to lie in a generally vertical plane arranged to cut vine canes extending outwardly from the trellis wire in a direction towards the vehicle; and

a third said saw being an inner saw also in a generally vertical plane spaced from the first said vertical plane, arranged to cut vine canes extending inwardly from the trellis wire in a direction away from the vehicle, and

power means coupled to each respective said saw for rotationally driving that said saw,

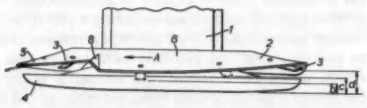
the third of said saws being carried by the swivel frame so as to be capable of being raised or lowered with respect to said first and second saws.

4,206,586

MOWING MACHINE

Petrus W. Zweegers, Nieuwendijk 46, Geldrop, Netherlands

Filed May 3, 1978, Ser. No. 902,403
Claims priority, application Netherlands, May 13, 1977, 7705300
Int. Cl.[2] A01D 55/18
U.S. Cl. 56—295 7 Claims



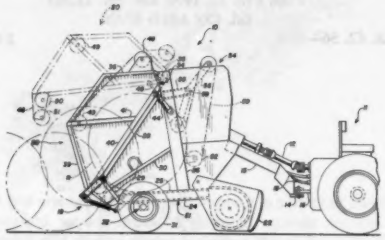
1. A mowing machine comprising a cutting member rotatable around a substantially vertical axis of rotation in a direction of rotation, said cutting member comprising a central drum-shaped element coaxial to said axis of rotation and having a bottom, a substantially horizontal annular skirt attached at the bottom of said drum-shaped element, said skirt having a plurality of successive continuous circumferential sectors each of which is upwardly inclined opposite from the direction of rotation of the cutting member, and a cutting knife on each of said inclined sectors.

4,206,587

DISCHARGE MEANS

John H. Freimuth, New Holland; James T. Clevenger, Jr., Lancaster; Willis R. Campbell, Ephrata, and Anthony F. Diederich, Jr., New Holland, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Jan. 4, 1979, Ser. No. 866
Int. Cl.[2] A01D 75/00, 39/00
U.S. Cl. 56—341 19 Claims



1. In a crop roll forming machine of the type having a mobile frame, a pickup, a bale forming region for receiving the crop material from the pickup, bale forming means for imparting motion to the bale, and drive means, the improvement comprising:

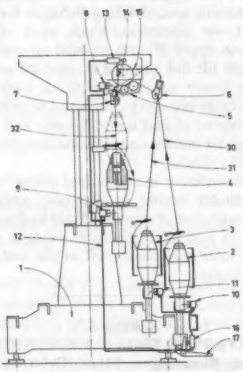
a kicker means fastened to the frame for receiving the bale upon its discharge from the frame and propelling it rearwardly clear of the frame.

4,206,588

MACHINE FOR THROWING AND TWISTING YARNS

Jean Venot, Roanne, France, assignor to ASA S.A., Roanne, France

Filed Jan. 31, 1979, Ser. No. 7,967
Claims priority, application France, Feb. 15, 1978, 78 04984
Int. Cl.[2] D01H 1/24, 1/28, 13/14
U.S. Cl. 57—80 4 Claims



1. A yarn throwing and twisting machine comprising a number of working positions, there being at each working position at least two throwing spindles, a twisting spindle, a manually engageable and disengageable yarn feeder between said throwing spindles and said twisting spindle, yarn break detectors upstream and downstream of said yarn feeder, and

respective pneumatic jacks associated with said throwing spindles, said twisting spindle and said yarn feeder, for causing engagement and disengagement thereof, a common pipeline connecting said pneumatic jacks, a solenoid valve for connecting said pipeline to a source of compressed air, opening and closing of said solenoid valve being controlled by said yarn break detectors, and a manually operable valve in said pipeline between the jacks associated with the throwing spindles and the jack associated with the twisting spindle.

4,206,589

FORMATION OF A SELF TWIST FIBROUS STRUCTURE

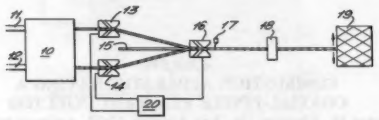
John J. Markey, Rossendale, and William M. Farnhill, Burnley, both of England, assignors to Platt Saco Lowell Limited, United Kingdom

Filed Nov. 9, 1978, Ser. No. 959,406

Claims priority, application United Kingdom, Nov. 9, 1977, 46575/77

Int. Cl.[2] D01H *7/90, 7/92;* D02G *3/26*

U.S. Cl. 57—293 **4 Claims**



1. In an apparatus for forming a self-twisted fibrous structure, comprising first twisting means for twisting each of two strands of similar count in parallel array so as to impart along its length alternate zones of opposite twist and second twisting means for receiving both strands of alternately twisted strands as a plied structure and for imparting to said plied structure further alternating zones of opposite twist along the length thereof, the improvement comprising control means for controlling the point of convergence of said two strands of alternately zoned twisted structure intermediate said first and second twisting means such that said point of convergence is at most one-half cycle length from said first twisting means, and for controlling said further alternate zones of opposite twist imparted to said plied structure such that they are of equal frequency to those imparted by said first twisting means but that such frequency is out of phase with said frequency imparted by said first twisting means within the range of from 20° to 60°.

4,206,590

ELECTRONIC WRISTWATCH CASE

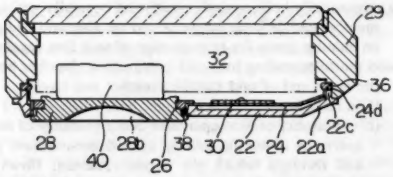
Satoru Fukutome, and Yasuo Maekawa, both of Tanashi, Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Jul. 3, 1978, Ser. No. 921,310

Claims priority, application Japan, Jul. 9, 1977, 52-91439[U]

Int. Cl.[2] G04C *21/34*

U.S. Cl. 368—72 **8 Claims**



1. A case construction for an electronic wristwatch powered by a battery, comprising:

a case band;

a sound-emitting cover detachably fastened to said case band and including a battery replacement through-hole and a plurality of sound-emitting holes;

a fixing ring disposed in concentric relationship with said battery replacement through-hole and including an engaging portion;

a battery hatch removably engaging with the engaging portion of said fixing ring;

a vibrating plate fixed to said fixing ring and disposed in spaced relationship with respect to said sound-emitting cover, said vibrating plate including a sealing ring compression portion received in the through-hole of said sound-emitting cover;

a sealing ring disposed between the sealing ring compession portion of said vibrating plate and said battery hatch to provide a watertight sealing effect therebetween; and

a piezoelectric vibrating element mounted on said vibrating plate.

4,206,591

WATCHGLASS FIXING STRUCTURE FOR TIMEPIECE

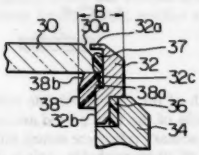
Yasuo Maekawa, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed May 19, 1978, Ser. No. 907,465

Claims priority, application Japan, May 31, 1977, 52-70185[U]

Int. Cl.[2] G04B *37/08, 39/00;* G01D *11/26;* G01L *19/14*

U.S. Cl. 368—295 **9 Claims**



1. A structure for fixing a watchglass of a timepiece, comprising:

a watchglass fixing member including a radially, inwardly extending annular flange formed at an upper portion of said watchglass fixing member, and an inner circumferential surface having an inwardly facing annular groove formed at a position adjacent to said annular flange;

a waterproof packing disposed in said annular groove and compressed between an outer periphery of said watchglass and an inner periphery of said annular groove; and

a backing ring including a radially outwardly extending annular projection fitted into said annular groove, said backing ring having its top surface engaging bottom surfaces of said watchglass and said waterproof packing, thereby preventing downward displacement of said watchglass and said waterproof packing.

4,206,592

TIMEPIECE FOR IDENTIFYING TIME BY COLOR

Marilyn J. Maue, 20 Melwex St., Belleville, N.J. 07109

Continuation of Ser. No. 129,543, Mar. 30, 1970, abandoned, and a continuation-in-part of Ser. No. 696,940, Jan. 10, 1968, Pat. No. 3,616,643. This application Jul. 24, 1974, Ser. No. 491,530

Int. Cl.[2] G04B *19/06*

U.S. Cl. 368—233 **18 Claims**

1. In a timepiece having a single reference means associated with distinguishable colors of a color arrangement which comprises in combination:

(a) a standard timepiece driving means connected through a gear means to a rotatable member causing said rotatable member to complete a rotation in a single time period;

(b) at least one annular member having a solid diameter surface;

(c) an annular display portion on the visible surface of said

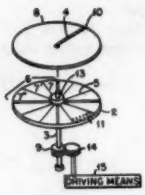
annular member having uniformly divided color sections, each section representing a uniform unit of time within a single predetermined time period which is the hours in a day or the minutes in an hour;

(d) said sections of said annular display distinguished each from the others by a distinguishable color in each of said sections and said units of time within the single predetermined time period being represented solely by the colors of said sections;

(e) not more than one solitary reference means associated with said colored sections for indicating colors on said annular member;

(f) said timepiece having at least one time period displayed by said color arrangement which color arrangement is distinguished from any other time period displayed by the timepiece; and

(g) a gear means connected to said standard driving means and said rotatable member for causing relative rotational movement between said colored display portion on said annular member and said solitary reference means associated with said colored sections of said annular member



such that each of the distinguishable colors representing cumulative units of the time period are successively positioned at said solitary reference means associated with the display area of distinguishable colors within the time period, whereby said solitary reference means associated with color indicates at least a portion of one of said sections carrying a distinguishable color, thereby successively and progressively identifying each of the intervals of elapsed time within the time period, the improvement which comprises:

a cover member mounted over the display portion of the annular member adapted to reveal at least one section of said display portion, said solitary reference means associated with the display area of distinguishable colors being fixedly positioned on said cover member so as to be adapted to indicate one section of said display portion, said display portion of said annular member being stationary, and said cover member being mounted on a shaft having gear means adapted to engage said standard driving means whereby said reference means is rotated by rotating said cover member.

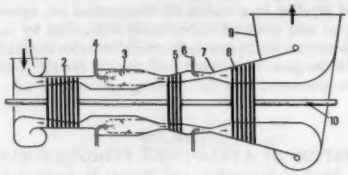
4,206,593

GAS TURBINE

Cyril K. M. Su, La Celle Saint Cloud, and Michel Verwaerde, Orgeval, both of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed May 23, 1978, Ser. No. 908,604
Claims priority, application France, May 23, 1977, 77 16241
Int. Cl.[2] F02C *3/18*
U.S. Cl. 60—39.04 **14 Claims**

1. A gas turbine comprising an air compressor, a first combustion chamber of cylindrical shape comprising a fuel inlet at the first end thereof and an exhaust gas exit at the second end thereof, the compressed air from said compressor entering said first combustion chamber, a first expansion turbine receiving combustion gases from said exhaust gas exit, at least one second combustion chamber of venturi shape comprising an internal means for injecting fuel in the direction of the longitudinal axis of the venturi, said at least one second combustion chamber of venturi shape receiving substantially all of the gases from said first expansion turbine, and a second expansion tur-



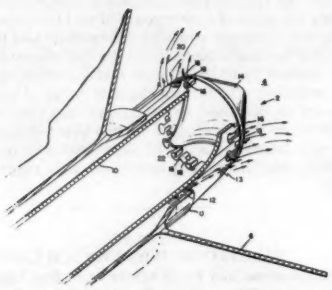
bine, said second expansion turbine receiving combustion gases from said second combustion chamber of venturi shape.

4,206,594

COMBUSTION APPARATUS HAVING A COAXIAL-PINTLE REACTANT INJECTOR

Gerard W. Elverum, Jr., Los Angeles, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 696,470, Jan. 8, 1968, Pat. No. 3,699,772. This application Nov. 1, 1971, Ser. No. 194,348
The portion of the term of this patent subsequent to Oct. 24, 1989, has been disclaimed.
Int. Cl.[2] F23D *11/38*; B05B *7/08*
U.S. Cl. 60—258 **3 Claims**



1. In a combustion apparatus comprising a combustion chamber and an injector assembly for introducing first and second reactants into said chamber, said injector assembly comprising:

an annular member,

a substantially hollow pintle positioned coaxially within said member and defining between said member and said pintle an annular space for introduction of said first reactant,

said pintle extending into said combustion chamber beyond the inner end of said annular member and having:

(a) a closure member at its inner end,

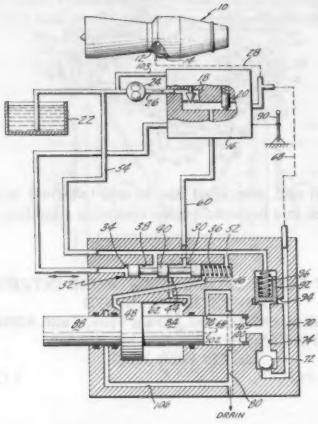
(b) a plurality of first apertures and a plurality of second apertures circumferentially spaced around said pintle and through which the second reactant flows outwardly from the follow interior of said pintle in a manner to impinge and mix with said first reactant, with the upstream edge of each first aperture being further from the end of said pintle than the upstream edge of any second aperture and with the second apertures being substantially smaller than the first apertures.

4,206,595

FUEL COLLECTING AND RECYCLING SYSTEM

Edward F. Cole, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Apr. 21, 1978, Ser. No. 898,608
Int. Cl.[2] F02C 3/24
U.S. Cl. 60—39.09 F 5 Claims



1. Means for recycling fuel leftover in the connecting lines of a fuel supply system for a gas turbine engine in combination with a fuel control having a minimum pressure and shutoff valve opening when the pressure of the fuel being metered achieves a given value, said recycling means having fuel collecting means collecting the fuel captured in said connecting lines upon engine shutdown and including a shutoff valve interconnecting the fuel collecting means and said fuel supply system, the volume of said collecting means bearing a given relationship to the volume of said connecting lines so as to collect all of the fuel remaining in said connecting lines, said minimum pressure and shutoff valve and said shutoff valve being referenced to the same pressure signal for setting a first value of the opening force on each of said valves, additional force means subjecting each of said valves to a second value so that the total of said first and second values constitutes the force required to open each of said valves, the force of said additional force means on said shutoff valve being less than the force of said additional force on said minimum pressure and shutoff valve whereby said shutoff valve opens prior to said minimum pressure and shutoff valve thereby assuring a smooth transition of fuel being admitted to said engine upon engine start up.

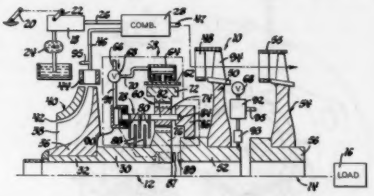
4,206,596

DUAL SHAFT GASIFIER SPOOL FOR TWO SHAFT GAS TURBINE ENGINE

William R. Kuziak, Jr., Sterling Heights; Elias H. Razinsky, Troy, and Mason K. Yu, Birmingham, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 14, 1978, Ser. No. 942,356
Int. Cl.[2] F02C 3/10
U.S. Cl. 60—39.16 R 3 Claims

1. In a dual shaft gas turbine engine having a gasifier turbine for driving a compressor to supply engine air and a power turbine for supplying energy to a driven load and including a combustor for burning air and fuel to supply motive fluid to both the gasifier turbine and the power turbine, the improvement comprising: a two part gasifier spool shaft including a first portion connected to the gasifier compressor and a second portion connected to the gasifier turbine, speed responsive lock-up means for selectively connecting and disconnecting said first and second shaft portions for controlling the gas flow angle of incidence across the entrance to the gasifier turbine rotor, said speed responsive lock-up means including a clutch and a gear set, said clutch and gear set being conditioned at a predetermined compressor discharge pressure and gasifier turbine speed to join said first and second shaft portions together to produce equal gasifier turbine and compressor speeds at a predetermined load range of engine operation to maintain a first incidence angle of inlet gas flow at the entrance to the



gasifier turbine rotor for optimal efficiency of flow of motive fluid thereacross, said clutch being conditioned upon gasifier turbine speed in a second predetermined speed range of operation to interpose said gear set between said gasifier compressor and said gasifier turbine to cause said gasifier turbine to rotate at a speed differing from that of said gasifier compressor thereby to maintain incidence angles of attack of motive fluid on said gasifier turbine under the second speed range to avoid excessive blade flow losses in said gasifier turbine.

4,206,597

FAN R.P.M. CONTROL LOOP STABILIZATION USING HIGH ROTOR SPEED

Hals N. Larsen, Redmond, and Peter W. Kamber, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Apr. 23, 1976, Ser. No. 679,594
Int. Cl.[2] F02K 3/06; F02C 9/04
U.S. Cl. 60—226 R 7 Claims

1. In a twin spool turbofan engine having a high speed spool and a fan spool, a control system for stabilizing changes in the thrust output of said engine, said control system comprising:

means for generating a first speed dependent signal as a function of fan spool speed of rotation;

means for generating a second speed dependent signal as a function of the high speed spool speed of rotation;

means for generating a first desired-speed signal indicative of a speed of fan spool rotation corresponding to a desired thrust output of said engine;

means for comparing said first speed dependent signal with said first desired-speed signal and producing therefrom a first error signal proportional to the difference therebetween;

means responsive to said first error signal for generating a second desired-speed signal indicative of the desired high speed spool speed of rotation;

means for comparing said second speed dependent signal with said second desired speed signal and producing therefrom a second error signal proportional to the difference therebetween; and

means for adjusting the flow of fuel to said turbofan engine in response to said second error signal and thereby controlling the thrust output of said engine.

4,206,598

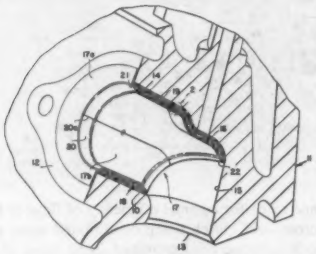
LOW COST CAST-IN PLACE PORT LINER

Vemulapalli D. N. Rao, Bloomfield Township, Oakland County, and Angelo Jaimee, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 849,729, Nov. 9, 1977, Pat. No. 4,167,207. This application Oct. 25, 1978, Ser. No. 954,795

Int. Cl.[2] F01N *3/10*

U.S. Cl. 60—282 **1 Claim**



1. In an internal combustion engine having an engine casing with at least one combustion chamber formed in said engine casing and at least one exhaust passage extending from said combustion chamber to the exterior of said engine casing for discharge of exhaust gases generated in said combustion chamber, the improvement comprising, a three-zone tubular insert assembly having one end formed with a radially outwardly extending flange and the other end an open elbow, said insert having a radially outer zone consisting essentially of silicon plastic having a melting temperature greater than 200° F. and a thickness of about 0.01 inches, an innermost zone comprised of a high temperature resistant metal alloy consisting essentially of iron in the range of 70–85% by weight, chromium in the range of 12–22%, and aluminum in the range of ½–3%, and having a thickness of 0.025 inches, said innermost zone having a specific heat of 0.1 BTU/lb./°F., and an intermediate zone 0.06–0.08 inches thick comprising a sleeve insulating ceramic fibers adhered to the outer surface of said metal alloy, and means for supporting said insert assembly in intimate contact with said exhaust passage throughout the entire outer surface of said assembly, said latter means having a plain carbon steel cylinder fused to the wall of said exhaust passage throughout substantially said cylinder's outer surface.

4,206,599

INTERNAL COMBUSTION ENGINE

Masaharu Sumiyoshi; Setsuro Sekiya; Katsuhiko Motosugi, all of Toyota; Junzo Uozumi, Nagoya; Tsuneo Ando, Chiryu; Yuzo Takeuchi, and Mikio Minoura, both of Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Ohbu, both of, Japan

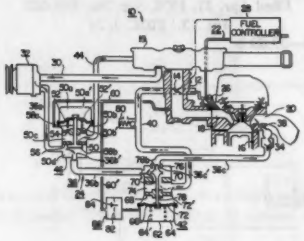
Filed Sep. 6, 1978, Ser. No. 939,984

Claims priority, application Japan, Sep. 7, 1977, 52-107435

Int. Cl.[2] F01N *3/10*

U.S. Cl. 60—285 **17 Claims**

1. An internal combustion engine comprising a secondary air supply system including an air pump for pressurizing air and a secondary air supply line through which the pressurized air is supplied as a secondary air into the engine exhaust system, and a fuel injection system including at least one injector disposed in the engine intake system and a fuel source operative to feed a fuel under pressure to said injector, wherein said injector is formed by a two-fluid injection nozzle operative to inject the fuel under pressure together with air, and wherein an air distributor is provided on said secondary air supply line between the ends thereof and said two-fluid injection nozzle is pneumatically connected to said air distributor by a branch air line, said air distributor being operative to cause the pressurized air to



flow through said branch air line to said two-fluid injection nozzle at least in a highload engine operating condition.

4,206,600

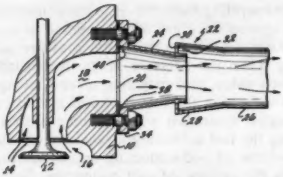
EXHAUST SYSTEM FOR FOUR-STROKE INTERNAL COMBUSTION ENGINES

James J. Feuling, 686 Ash Ave., Chula Vista, Calif. 92010

Filed May 30, 1978, Ser. No. 910,649

Int. Cl.[2] F02B *27/02*

U.S. Cl. 60—312 **7 Claims**



1. An exhaust system for a four-stroke reciprocating internal combustion engines having an exhaust gas channel from an exhaust valve to an opening in an engine head surface, which comprises:

a generally conical conveying first pipe having a larger inlet end adapted to be secured to said head surface around said opening with the smaller outlet end extending away from said opening, wherein the area of the first pipe inlet opening is from about twenty to fifty percent (20–50%) larger than the area across said opening in said head surface; and

a second pipe connected to said first pipe in a generally continuous fluid flow relationship therewith;

said second pipe having a generally conical converging introductory section, the larger inlet end of which surrounds the outlet end of said first pipe and is secured thereto in a fluid tight overlapping relationship forming a ring-shaped pocket therebetween; the volume of said pocket being from about two to twelve percent (2–12%) of the volume of the first pipe.

4,206,601

COMPRESSED AIR PRODUCING, TIDAL AND WAVE-POWER COLLECTION APPARATUS FOR INSTALLATION IN LARGE BODIES OF WATER

William J. Eberle, 2406 Wassner Dr., Reading, Pa. 19609, assignor to Benasutti Asst., Ltd., 1617 J.F. Kennedy Blvd.

Filed Jun. 26, 1978, Ser. No. 918,727

Int. Cl.[2] E02B *9/08;* **F03B** *13/12*

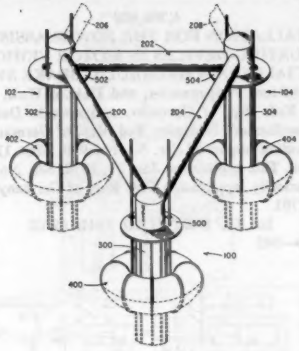
U.S. Cl. 60—398 **17 Claims**

1. A wave-power collection apparatus for installation in a large body of water for converting wave energy into high pressure compressed air, for collecting said air in said appara-

tus, and for transmitting said compressed air to a preselected consumption site, comprising:

(a) at least three power collection means, each of which is embedded in the floor of said body of water and extends to protrude for a preselected distance above the high water line thereof; and

(b) bridging means engaging portions of said power collection means above said high water line for rigidly interconnecting said power collection means said bridging mens



extending from each of said power collection means to at least two adjacent ones of said power collection means to create a rigid collection module, said bridging means further comprising conduit means extending between said power collection means for transmitting compressed air to a preselected consumption site, and catwalk means for facilitating pedestrian movement between ones of said power collection means, said catwalk means comprising a substantially tubular bridging member having said conduit means disposed therein.

4,206,602

SINGLE LEVER HYDRAULIC SYSTEM CONTROL MECHANISM

Gary E. Watson, Mequon; Edward A. Simi, Menomonee Falls, and Richard R. Miller, Milwaukee, all of Wis., assignors to Douglas Dynamics, Inc., Milwaukee, Wis.

Filed Apr. 19, 1979, Ser. No. 31,401
Int. Cl.[2] F15B *13/06, 21/08;* G05G *9/00*
U.S. Cl. 60—433 **16 Claims**

1. A single lever control mechanism for controlling the operation of hydraulic cylinders and comprising:

a control housing,

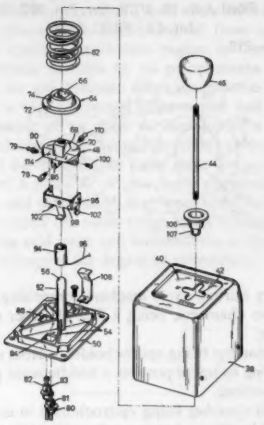
a manually operable lever,

a support member housed in said control housing and having a supporting surface,

a pivot member rigidly connected to the lower end of said lever and supported on said supporting surface of said support member for rocking movement from a neutral position in a first pivotal direction and in a second pivotal direction transverse to said first direction, and said pivot member having a plurality of sides,

a first cable attached to one side of said pivot member, said cable being adapted to be operably connected to a first hydraulic cylinder and for actuating that hydraulic cylinder in response to pivotal movement of said lever and said pivot member in said first direction, and

a second cable attached to another side of said pivot member transverse to said one side of said pivot member, said second cable being adapted to be operably connected to a second hydraulic cylinder and for actuating that hydraulic



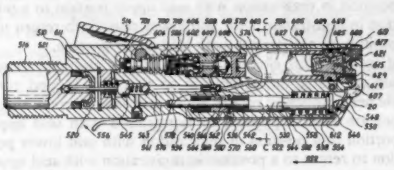
cylinder in response to pivotal movement of said lever and said pivot member in said second direction.

4,206,603

SINGLE HAND OPERATED TOOL

Dan Mekler, 18 Methodela St., Jerusalem, Israel

Continuation-in-part of Ser. No. 815,377, Jul. 13, 1977, Pat. No. 4,149,381. This application Nov. 9, 1978, Ser. No. 959,230
Int. Cl.[2] F15B *15/18*
U.S. Cl. 60—477 **9 Claims**



1. A single hand held and operated tool comprising:

a housing;

a hydraulic fluid reservoir located in said housing;

a hydraulic pressure cylinder located in said housing;

a hydraulic piston moving with respect to said pressure cylinder in response to hydraulic pressure produced therein;

a hydraulic pump operable by a single hand while grasping said housing and coupled to said fluid reservoir and to said pressure cylinder for forcing hydraulic fluid received from said reservoir into said cylinder; and

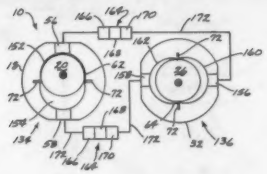
valve means governing fluid communication between said hydraulic pump and said pressure cylinder and operative in response to hydraulic pressure in said cylinder for lowering the quantity of hydraulic fluid supplied to said cylinder by each pump stroke when the pressure in said cylinder exceeds a predetermined pressure, thus providing two-speed tool operation.

4,206,604

ROTARY STIRLING CYCLE MACHINE

Steven Reich, 1330 W. Ridgeway Ave., Waterloo, Iowa 50701

Filed Apr. 18, 1978, Ser. No. 897,496
Int. Cl.[2] F02G 1/04
U.S. Cl. 60—518 16 Claims



1. A rotary Stirling cycle machine comprising,

at least two chambers, being a first chamber and a second chamber,

said first chamber being epitrochoidal in cross sectional area and having an upper portion, a middle waist portion and a lower portion,

said second chamber being epitrochoidal in cross sectional area and having an upper portion, a middle waist portion and a lower portion, said second chamber being mounted to said first chamber,

a first seal means attached to said waist portion of said first chamber and inwardly disposed,

a second seal means attached to said waist portion of said second chamber and inwardly disposed,

a crankshaft rotatably mounted within said first and second chambers and extending therethrough, said crankshaft having a first crank throw portion within said first chamber and a second crank throw portion within said second chamber, said first crank throw portion being 180° out of phase with said second crank throw portion,

first and second rotor elements adapted to register with said upper portions and said lower portions of said first and second chambers, respectively,

said first rotor element being rotatably mounted to said first crank throw portion so that said first rotor element cyclically rotates about said first crank throw portion from a position in registration with said upper portion to a position in registration with said lower portion to return to a position in registration with said upper portion,

said second rotor element being rotatably mounted to said second crank throw portion so that said second rotor element cyclically rotates about said second crank throw portion from a position in registration with said upper portion to a position in registration with said lower portion to return to a position in registration with said upper portion,

said first seal means being in constant sealing engagement with said first rotor element to define a first cavity in said upper portion of said first chamber and a second cavity in said lower portion of said first chamber,

said second seal means being in constant sealing engagement with said second rotor element to define a first cavity in said upper portion of said second chamber and a second cavity in said lower portion of said second chamber, and

first and second heater-regenerator-cooler means to condition a working fluid through repeated Stirling cycles, said first heater-regenerator-cooler means operatively connected to said first cavities of said first and second chambers and said second heater-regenerator-cooler means operatively connected to said second cavities of said first and second chambers,

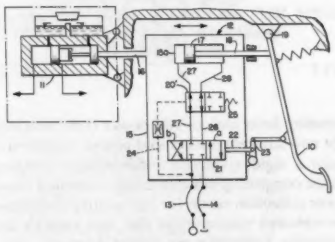
said first chamber being rotatably mounted to said second chamber to permit selective variance of the angle between the longitudinal axis of said first chamber and the longitudinal axis of said second chamber for selective control of power output of said machine when said machine is operated as a prime mover.

4,206,605

INSTALLATION FOR THE POWER ASSIST OF ACTUATING DEVICES IN MOTOR VEHICLES, ESPECIALLY IN A HYDRAULIC BRAKE SYSTEM

Herbert Mehren, Poppenweiler, and Helmut Wulf, Nellingen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 557,990, Mar. 12, 1975, abandoned. This application Jan. 17, 1978, Ser. No. 870,070
Claims priority, application Fed. Rep. of Germany, Mar. 12, 1974, 2411701
Int. Cl.[2] B60T 13/00; F01B 15/02
U.S. Cl. 60—545 14 Claims



1. An installation for the force assist of brake actuating means in an automobile comprising:

actuating means,

an operating member for acting upon said actuating means,

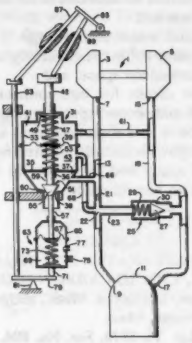
a servo-unit having a housing displaceably guided upon support means for enabling said operating member to act upon said actuating means, and including amplifier means between the operating member and the actuator means, said amplifier means comprising a piston engageable by said operating member and positioned within a cylinder so as to divide said cylinder into plural chambers, said piston having one side exposing a first effective cross-sectioned area to a first of said chambers and a second oppositely directed side exposing a second smaller effective cross-sectional area to a second of said chambers, said servo-unit further comprising a first portion of the housing connected with the operating member, a second portion of the housing operatively connected to the actuating means, and control means for controlling the actuation of said servo-unit in the manner of a follower control providing a feedback to the operating member as to the applied pressure from a hydraulic pressure medium source by means of a first control device operatively connected with the operating member, and a second control device for enabling said operating member to act upon said actuating member upon failure of said hydraulic pressure medium source, said second control device including valve means communicating said one side of said piston with said hydraulic pressure medium source and said second side of said piston with a return in a first position of said valve means and discontinuing said communication in a second position of said valve means, said valve means being displaced from said first position to said second position upon failure of said hydraulic pressure medium source.

4,206,606

EXHAUST GAS RECIRCULATION MECHANISM FOR AN ENGINE WITH A TURBOCHARGER

Koichiro Yamada, Ibaraki, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 920,697
Claims priority, application Japan, Jul. 1, 1977, 52/79373
Int. Cl.[2] F02B 37/00
U.S. Cl. 60—605 6 Claims



1. An exhaust gas recirculation mechanism for an internal combustion engine with a turbocharger including a turbine driven by exhaust gas from the engine and a compressor operatively connected to the turbine to deliver compressed air to the engine, which mechanism comprising:

a delivery passage communicating between an intake port of the engine and the compressor;

an exhaust passage communicating between an exhaust port of the engine and the turbine;

a recirculation passage with one way valve means connected to both the exhaust passage and the delivery passage for passing part of the exhaust gas from the engine to the delivery passage only when a pressure difference between the exhaust passage and the delivery passage reaches a predetermined value;

means connected to the delivery passage upstream of the a recirculation passage joining portion for discharging part of compressed air in the delivery passage; and

means responsive to both a pressure in the delivery passage and a pressure in the exhaust passage for controlling the part of the compressed air discharging through the discharging means so that a pressure of compressed air at the recirculation passage joining portion will be lowered; whereby part of exhaust gas from the engine can be recirculated to the engine through the exhaust passage, the recirculation passage and the delivery passage.

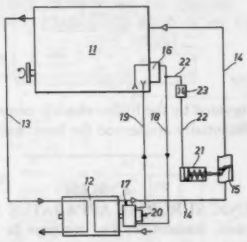
4,206,607

GAS DYNAMIC WAVE MACHINE

Hansjörg Heberle, Bodman-Ludwigshafen, and Wolfgang Rudert, Langenargen, both of Fed. Rep. of Germany, assignors to BBC Aktiengesellschaft, Baden, Switzerland

Filed Nov. 10, 1977, Ser. No. 850,394
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1976, 2651473
Int. Cl.[2] F02B 37/00
U.S. Cl. 60—611 4 Claims

1. A gas dynamic wave machine for a supercharged internal combustion engine, the wave machine including a rotor wheel, an independent drive means for driving the rotor wheel, a charging air line means interposed between the wave machine and cylinders of the internal combustion engine, and means for selectively opening and closing the charging air line means in dependence upon an operative state of the internal combustion engine, characterized in that the independent drive means is a hydrostatic drive means, characterized in that the independent drive means is a hydrostatic drive means, in that means are provided for varying a transmission ratio of the hydrostatic drive means, in that a pressure medium of the hydrostatic drive means is constituted by a lubricating oil from a lubricating system of the internal combustion engine, in that the hydrostatic drive means includes an oil pump means operatively connected to the gas dynamic wave machine, in that the oil motor means is of a trochoidal construction and includes an inner rotor having on an outer surface thereof a plurality of gear teeth, said inner rotor being operatively connected to one of a drive and driven shaft, an outer rotor having on an inner surface thereof a plurality of gear teeth cooperable with the gear teeth on said inner rotor, said inner rotor being disposed eccentrically within the outer rotor, and a housing means for accommodating said inner and outer rotors, in that means are provided for changing the degree of eccentricity between the



inner and outer rotors relative to pressure medium inlet and outlet openings of the oil motor means, in that said charging means is an eccentric bearing bush disposed between the housing means and the outer rotor of the oil motor means, in that an adjusting means is operatively connected with said bearing bush for rotating said bearing bush, said adjusting means being accessible from outside of said housing means so as to permit a fine adjustment of the degree of eccentricity, in that means are operatively connected with said adjusting means for controlling a positioning of the adjusting means in response to predetermined operating parameters of the internal combustion engine, and in that the means for selectively opening and closing the charging air line means includes a sealing valve disposed in the charging air line means, and a hydraulic cylinder means operatively connected with said sealing valve and said hydrostatic drive means whereby said sealing valve is actuated by a pressure of the pressure medium of the hydrostatic drive means.

4,206,608

NATURAL ENERGY CONVERSION, STORAGE AND ELECTRICITY GENERATION SYSTEM

Thomas J. Bell, 1585 Bay Point Dr., Sarasota, Fla. 33577

Filed Jun. 21, 1978, Ser. No. 917,737
Int. Cl.[2] F01B 23/08, 23/10
U.S. Cl. 60—698 17 Claims

1. Apparatus for converting natural energy into electrical energy comprising:

natural energy conversion means for utilizing at least one source of natural energy to pressurize a hydraulic fluid;

high pressure storage means for storing the hydraulic fluid pressurized by the natural energy conversion means;

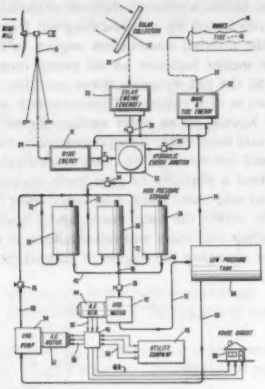
electro-hydraulic conversion means for utilizing electricity to pressurize hydraulic fluid;

hydro-electric conversion means for utilizing pressurized hydraulic fluid to generate electricity;

means for supplying excess electricity from the hydro-electric conversion means to the electro-hydraulic conversion means; and

means for supplying pressurized hydraulic fluid from the

electro-hydraulic conversion means to the high pressure storage means whereby the energy of the excess electric-



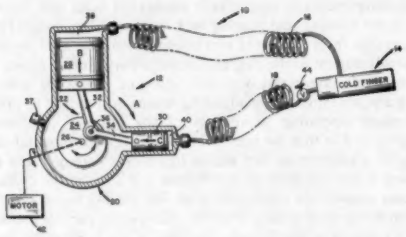
ity generated by the hydro-electric conversion means may be substantially conserved for later use.

4,206,609

CRYOGENIC SURGICAL APPARATUS AND METHOD

Peter Durenec, Annandale, Va., assignor to Actus, Inc., Florence, Ky.

Filed Sep. 1, 1978, Ser. No. 938,782
Int. Cl.[2] F25B *9/00*; F25D *3/00*; F25B *19/00*
U.S. Cl. 62—6 14 Claims



1. An apparatus for use in a cryogenic surgical operation, the apparatus comprising a closed fluidically controlled Stirling cycle cooling system having a compression portion, a distinct expansion portion spaced from the compression portion, and flexible conduit means for interconnecting the compression and expansion portions, said compression portion comprising:

a first piston positioned in a first cylinder,

a second piston smaller than said first piston positioned in a second cylinder, and

means for reciprocally moving said pistons to compress refrigerant in said cylinders, said pistons being moved in such manner that there is a 90° mechanical phase difference in the movement of said pistons;

said expansion portion comprising:

a third cylinder having distinct first, intermediate, and second spaces,

a third piston positioned in said third cylinder having opposite ends positioned in said first and second spaces, respectively, said third piston being displaceable in said third cylinder by the movement of said first and second pistons,

a regenerator positioned in said end of said third cylinder which is in said first space and in communication with said intermediate and said first spaces,

seal means for separating said first and said intermediate spaces and for separating said second and said intermediate spaces, and

an exterior portion of said third cylinder being in heat exchange relationship with said first space and defining a probe for use in a cryogenic surgical operation, the probe being selectively heated and cooled by controlling the direction of movement of said first and said second pistons; and

said flexible conduit means comprising:

first conduit means for interconnecting said first cylinder and said intermediate space, and

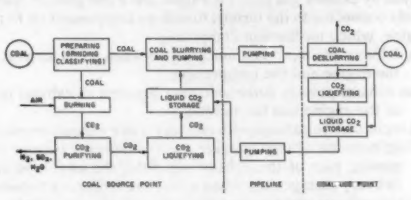
second conduit means for interconnecting said second cylinder and said second space so that displacement of said third piston in a direction from said first towards said second space is initially assisted by the pressure in said second space and subsequently opposed by the pressure in said second space.

4,206,610

METHOD AND APPARATUS FOR TRANSPORTING COAL AS A COAL/LIQUID CARBON DIOXIDE SLURRY

Chakra J. Santhanam, Lexington, Mass., assignor to Arthur D. Little, Inc., Cambridge, Mass.

Filed Apr. 14, 1978, Ser. No. 896,167
Int. Cl.[2] F17C *7/02*
U.S. Cl. 62—55 41 Claims



1. A method for transporting coal from a coal source point to a coal use point, comprising the steps of

(a) slurrying coal in finely divided form with liquid carbon dioxide to form a stable coal/liquid carbon dioxide slurry at said coal source point;

(b) pumping said slurry through a pipeline to said coal use point; and

(c) deslurrying said coal/liquid carbon dioxide slurry at said coal use point to separate said coal and said liquid carbon dioxide and to provide said coal in condition for burning and coal-free carbon dioxide, said deslurrying comprising adibatically expanding said slurry to reduce the pressure to that level at which essentially all of said carbon dioxide is vaporized out of said slurry; and prior to said expanding, introducing into said slurry sufficient heat to provide that lost in said expanding, whereby no appreciable amount of said carbon dioxide is solidified.

4,206,611

METHOD AND APPARATUS FOR ELIMINATING EXTERNAL CONDENSATE ON A ROOM AIR CONDITIONER

Richard D. Lang, Chittenango, and Richard E. Matthews, Syracuse, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

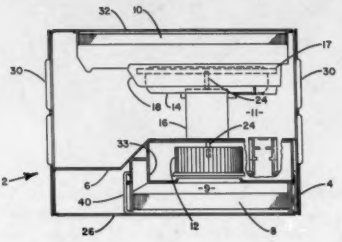
Filed Jun. 7, 1978, Ser. No. 913,403
Int. Cl.[2] F25B *47/00*
U.S. Cl. 62—85 9 Claims

1. An air conditioning unit which comprises:

a base pan to which a partition is mounted such that the

partition divides the air conditioning unit into an evaporator section and a condenser section; a condensate pan located in the evaporator section having a collection portion located below the evaporator to receive the condensate therefrom and a trough portion connecting the collection portion to the condenser section of the unit, said trough portion having at least one flow barrier forcing the condensate to follow a tortuous path such that the condensate is warmed sufficiently while travelling along the tortuous path that moisture is prevented from forming on the exterior of the unit, and

means for allowing warm air from the condenser section to reject heat to the condensate in the trough portion of the condensate pan within the evaporator section of the unit.



8. A method of reducing moisture formed on the exterior surface of an air conditioning unit as a result of cold condensate being in contact with the interior surface of the unit, said unit having a partition which divides the unit into an evaporator section having an evaporator where condensate is formed and a condenser section having means for ridding the unit of condensate which comprises the steps of:

collecting at least a portion of the condensate formed in the evaporator in a condensate pan;

conducting the condensate from the condensate pan to the condenser section through a tortuous flow path such that the temperature of the condensate is increased during flow along the path; providing for heat exchange communication between outdoor air and the condensate while the condensate is flowing along the tortuous flow path; and

ridding the unit of condensate within the condenser section.

4,206,612

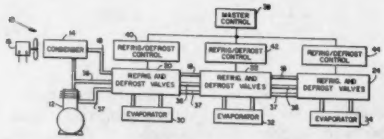
REFRIGERATION SYSTEM CONTROL METHOD AND APPARATUS

Edward B. Gardner, Bloomfield, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 816,091, Jul. 15, 1977, Pat. No. 4,151,723. This application Jul. 28, 1978, Ser. No. 928,961

Int. Cl.² F25D *21/00*

U.S. Cl. 62—128 **19 Claims**



1. A defrost control apparatus for a refrigeration system having a plurality of evaporators and defrosting equipment connected to defrost each of the evaporators independently of the others comprising:

timing signal generating means having an adjustable speed for producing at adjustable rate timing signals from which the defrosting of individual evaporators are scheduled;

controlled switching means connected between the timing signal generating means and the defrosting equipment for actuating in response to the timing signals individual portions of the equipment associated with the respective evaporators and thereby switching a corresponding evaporator into a defrosting mode when a timing signal for said evaporator is produced; and

testing means connected in controlled relationship with the timing signal generating means for increasing the rate at which the timing signals are generated and including means associated with the respective evaporators for establishing that the timing signals actuating the controlled switching means are produced for the respective evaporators by the generating means at the scheduled times.

4,206,613

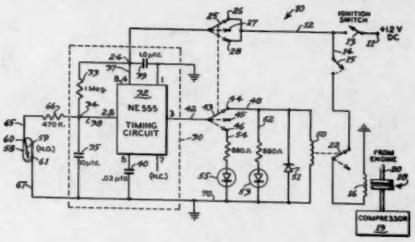
AIR CONDITIONER CONTROL SYSTEM

Norman E. Shockley, Apt. H3, 1199 Murfreesboro Rd., Nashville, Tenn. 37217

Filed Oct. 25, 1978, Ser. No. 954,358

Int. Cl.² B60H *3/04*; F16D *23/00*; B62D *45/00*; F22B *5/02*

U.S. Cl. 62—133 **9 Claims**



1. An air conditioner control system for an automotive vehicle, including a vehicle frame, an electrical power supply, an ignition circuit, an air conditioner compressor, and an electrically-controlled clutch for actuating and de-actuating the air conditioner compressor, comprising:

(a) compressor switch means connected to said electrical power supply for actuating the air conditioner compressor when said compressor switch means is in an operative position and for de-actuating said compressor when said compressor switch means is in an inoperative position,

(b) an electric timer circuit coupled to said electrical power source through said ignition circuit, and to said compressor switch means, said timer circuit functioning to render said compressor switch means inoperative when said ignition circuit is initially turned on and during the timing period of said timer circuit, said compressor switch means being rendered operative at the end of said timing period,

(c) an inertial switch mounted on said vehicle frame, normally non-conducting, but being conductive when said vehicle frame attains a predetermined acceleration value and grade,

(d) said inertial switch being coupled to said timer circuit, and functioning to render said compressor switch means inoperative while said inertial switch is conducting and during the timing period of said timer circuit after said inertial switch becomes non-conducting.

4,206,614

ICE PRODUCING APPARATUS

Harold L. Allbritton, P.O. Box 206, Greenwood, La. 71033

Filed Sep. 11, 1978, Ser. No. 941,038

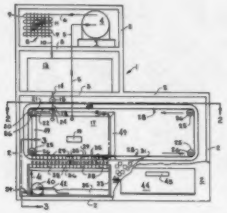
Int. Cl.² F25C *1/12*

U.S. Cl. 62—233 **7 Claims**

4. An ice producing apparatus comprising:

(a) a housing;

(b) an evaporator having a bottom freezing surface mounted in said housing;
(c) a plurality of rollers journalled for rotation in said housing;
(d) a closed path conveyor belt having an upper horizontal segment and a lower horizontal segment and formed of a plurality of discrete cavities open at the top and bottom and mounted on said rollers with a portion of the upper surface of said lower horizontal segment extending in contact with said bottom freezing surface of said evaporator;
(e) a receiver tank positioned in said housing above said evaporator and fitted for receiving, storing and dispensing warm liquid refrigerant;
(f) conduit means communicating from said receiver to said evaporator;
(g) solenoid valve means in said conduit means and adapted to selectively open and close said conduit means responsive to an electrical current;
(h) water spray means positioned in said housing beneath said bottom freezing surface of said evaporator and disposed to spray water into said discrete cavities and against



said bottom freezing surface to effect formation of ice in said cavities;
(i) belt drive means in cooperation with at least one of said rollers for selectively advancing said belt to position said ice above a storage area in said housing after said ice has formed in said cavities during the harvesting cycle of said apparatus; and
(j) timing means in electrical cooperation with said solenoid valve means, said belt drive means and said water spray means for initially closing said solenoid valve means and causing said belt drive means and said belt to stop for a selected period of time to permit said water spray means to spray water on said bottom freezing surface of said evaporator and said discrete cavities of said belt and to cause ice to form in said discrete cavities, and warm refrigerant to accumulate in said receiver, and subsequently opening said solenoid valve means to permit said warm refrigerant to flow into said evaporator and melt said ice joining said belt to said bottom freezing surface, and further causing said belt drive means to then advance said belt and harvest said ice in said storage area and cause a new segment of said belt to contact said bottom freezing surface.

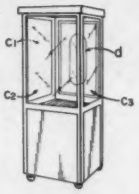
4,206,615

INSULATIVE MULTI-PANE WINDOW STRUCTURE OF REFRIGERATOR OR FREEZER

Shigenobu Sobajima, Hachioji; Kiyoshi Chiba, Niiza; Kunio Itoh, Hino; Utami Yonemura, Hino, and Yuji Mitani, Hino, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Sep. 27, 1978, Ser. No. 946,529
Int. Cl.[2] A47F *3/04*; F25D *21/06*
U.S. Cl. 62—248 **10 Claims**

1. An insulative multi-pane window structure for a forced circulation type refrigerator or freezer, said structure being interposed between a colder inside region and a warmer outside region of the refrigerator or freezer to permit vision therebetween, said structure comprising at least a first pane having a surface exposed during use to moisture-bearing air in the warmer region and a second pane opposed to and spaced from said first pane, and an infrared reflective coating on at least one surface of the surfaces constituted by the surface of said first pane which faces said second pane, the surface of said second pane which faces said first pane, and, when an intermediate pane is present between said first pane and said second pane, the surfaces of said intermediate pane, said infrared reflective coating being a transparent, electrically conductive laminated structure composed of:



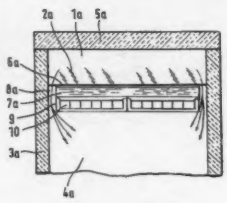
(a) a transparent solid substrate of a film-forming synthetic resin, said substrate being attached to said one surface;
(b) a thin layer of an oxide of titanium in contact with said substrate, said layer being derived from a layer of an organic compound and containing organic residual moieties of the organic titanium compound;
(c) a thin layer of an electrically conductive metal in contact with said thin layer of an oxide of titanium; and
(d) a further thin layer of an oxide of titanium in contact with said layer of conductive metal.

4,206,616

METHOD AND CONTAINER FOR COOLING GOODS WITH DRY ICE

Martin A. Frank, and Gerd Braun, both of Cologne, Fed. Rep. of Germany, assignors to Firma Kohlensaure-Werke Rud. Buse GmbH & Co., Bad Honningen, Fed. Rep. of Germany

Filed Jul. 5, 1978, Ser. No. 922,213
Int. Cl.[2] F25D *17/04*
U.S. Cl. 62—406 **4 Claims**



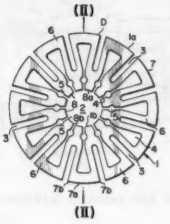
1. A container for refrigerating goods comprising an enclosed interior space subdivided by partition walls into a plurality of compartments which include one refrigerant compartment adapted to be charged with dry ice refrigerant and at least one chillroom compartment adapted for the containment of the goods to be refrigerated, the refrigerant compartment communicating with the chillroom compartment by openings which allow evaporating carbon dioxide from the dry ice to enter the chillroom compartment, and storage means of water located between the refrigerant compartment and the chillroom compartment in a sufficient quantity that at the beginning of the evaporation of the dry ice, the temperature in the chillroom compartment does not become substantially below −78° C.

4,206,617

RING FOR MOUNTING A ROTARY BODY TO A SHAFT

Takayuki Nakamoto, Tokyo, Japan, assignor to Iwata Electric Works Co., Ltd., Tokyo, Japan

Filed Aug. 29, 1978, Ser. No. 937,731
Claims priority, application Japan, Apr. 6, 1978, 53-40899
Int. Cl.[2] F16D 3/79
U.S. Cl. 64—13 16 Claims



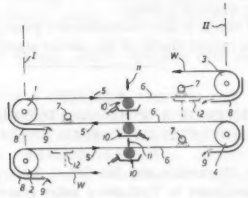
1. A ring member which is adapted to be disposed in an opening of a rotary member for coaxially mounting said rotary member to a shaft member which comprises a substantially convex ring body containing a centrally disposed hole, said ring body containing a plurality of outer slits which extend radially inwardly from the outer peripheral edge of the ring body toward the centrally disposed hole, a plurality of inner slits which radially extend outwardly from the edge defining the centrally disposed hole toward the outer peripheral edge of the ring body, and a plurality of through holes disposed in said ring body, said through holes being adapted to receive connecting rods for mounting the rotary member to said shaft member.

4,206,618

APPARATUS FOR CONTINUOUS FULL-WIDTH WASHING OF A TEXTILE CLOTH LAYER

Günter Schiffer, Krefeld, Fed. Rep. of Germany, assignor to Kleinewefers GmbH, Krefeld, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,805
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1978, 2807313
Int. Cl.[2] D06B 1/02, 13/00
U.S. Cl. 68—3SS 7 Claims



1. An apparatus for continuous full-width washing of a textile cloth layer, which apparatus comprises in combination:

two vertical rows of reversing devices, especially rollers, said rows being spaced from one another and said reversing devices being arranged in such a way that when a cloth layer is guided substantially horizontally from a reversing device of one row, to a reversing device of the other row, back to a reversing device of the first row, and so on, substantially horizontal internally-tensioned cloth layer sections are formed extending essentially unsupported between respective reversing devices of said two vertical rows of reversing devices;

means for supplying the upper side of a given substantially horizontal cloth layer section with a washing liquor film; and

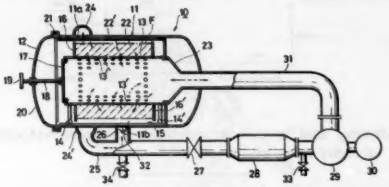
vibrating devices arranged between said vertical rows of reversing devices for imparting substantially vertical vibrations directly to the respective substantially horizontal cloth layer sections.

4,206,619

DYEING APPARATUS

Akio Fukuroi, Uozu; Masanobu Hayashi, Kurobe; Hiroshi Yamashita, Nagoya, and Isao Sugimoto, Aichi, all of Japan, assignors to Yoshida Kogyo K.K. and Nippon Dyeing Machine Manufacturing Co. Ltd., both of Aichi, Japan

Filed May 21, 1979, Ser. No. 40,978
Claims priority, application Japan, May 30, 1978, 53-63804
Int. Cl.[2] D06B 5/18
U.S. Cl. 68—20 3 Claims



1. A dyeing apparatus which comprises a cylindrical vessel of generally circular cross-section extending longitudinally along a generally horizontal axis and having a removable dished end; a perforated hollow beam supported within said vessel and extending longitudinally along said horizontal axis and adapted to wind upon its exterior a material to be treated; annular rim members secured to and extended transversely around said beam at opposite ends thereof and defining therebetween an annular volumetric section for retaining the material; a perforated flow-rectifying panel extending longitudinally of the vessel and overlying the upper portion of said beam; means supplying and circulating treatment liquid through the vessel; a first liquid flow take-out means mounted on the exterior of the vessel adjacent the front end thereof and passing liquid from the upper portion of the vessel to said supplying and circulating means; a second liquid flow take-out means positioned substantially centrally of the vessel and passing liquid from the bottom portion of the vessel to said circulating means; and means controlling the amount of liquid take-out from the vessel through said first and second take-out means.

4,206,620

DUAL MOTOR CARRIAGE DRIVE

Homer L. Eaton, Leucadia, Calif., assignor to Eaton-Leonard Corporation, Carlsbad, Calif.

Filed Jan. 12, 1979, Ser. No. 3,051
Int. Cl.[2] B21D 7/12, 43/12
U.S. Cl. 72—8 32 Claims

26. The method of positioning a tube at the bending head of a tube bending machine that has a tube advancing carriage, a tube rotating chuck on the carriage, and first and second drive motors, said method comprising the steps of

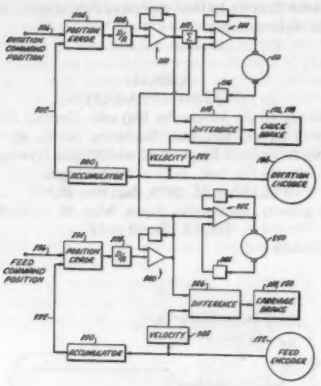
employing both motors to drive the carriage for an initial part of the tube advance required to longitudinally position the tube for a selected bend, and

thereafter initiating drive of said chuck from one of said motors while continuing drive of said carriage from the other motor.

30. The method of positioning a tube at the bending head of a tube bending machine that has a tube advancing carriage, a tube rotating chuck on the carriage, and first and second drive motors, said method comprising the steps of

providing a mechanical differential connecting said motors to said chuck and to said carriage,

driving said motors at mutually equivalent velocities to thereby drive said carriage from both motors, and



driving said motors at relatively different velocities to thereby drive said chuck.

4,206,621

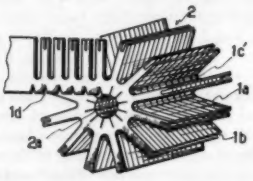
METHOD OF MAKING A WOUND ARMATURE CORE STRUCTURE

Kenzo Kawasaki, Kariya, and Shiuichi Itamoto, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 27, 1978, Ser. No. 946,372

Int. Cl.[2] **H01F** *3/04;* **H02K** *15/00;* **B21D** *11/06*

U.S. Cl. 72—130 **6 Claims**



1. A method of making a wound armature core structure having evenly spaced teeth, said core being adapted for use in a rotary electric machine, the method comprising the steps of:

notching opposite edges of an elongated metal strip at evenly spaced intervals,

zigzagly cutting the metal strip at evenly spaced intervals intermediate its edges in a longitudinal direction of the strip to form a pair of comb-like ribbons each having alternating teeth and slots with the teeth of one ribbon being complementary to the slots of the other,

forming a U-shaped groove at a free end of each of the teeth, each groove extending along the longitudinal axis of its respective tooth,

separating the pair of comb-like ribbons,

spirally winding one of the ribbons to form a generally cylindrical laminated body with the edge of the strip defining an internal bore and the teeth extending radially from said body at equally spaced intervals and

spreading each of the U-shaped grooves such that the portions of each tooth separated by a groove extend in opposite directions substantially transversely to the longitudinal axis of the respective tooth to thereby form a core shoe.

4,206,622

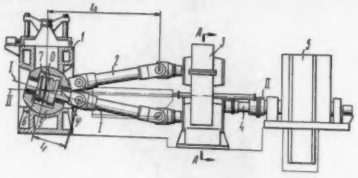
HELICAL ROLLING MILL ROLL LINE FOR PRODUCING DIE-ROLLED SECTIONS AND SOLIDS OF REVOLUTION

Igor K. Tartakovsky, ulitsa Sovetskaya, 2, kv. 102, Elektrostal; Moskovskaya oblast, U.S.S.R.

Filed Jul. 27, 1978, Ser. No. 928,592

Int. Cl.[2] **B21B** *13/00*

U.S. Cl. 72—95 **2 Claims**



1. In a roll line of a mill for helical and die rolling, comprising a working stand with rolls arranged at a preset angle of rolling, a pinion stand the output shafts of which are connected with said working stand rolls through respective spindles each being made in the form of a shaft having its ends provided with couplings, so that the shafts of the spindles are mounted in said couplings at an angle of obliquity relative to the axes of the rolls, the improvement consisting in that the shafts of the spindles are mounted at the same angle of obliquity in all the couplings of all the spindles, the axes of said output shafts of the pinion stand being equidistant from the axis of rolling, with the plane passing through the axes of rotation of the output shafts and through geometrical axis of the pinion shaft being inclined to the plane passing through the axis of rolling and through the axis of a variable angle of rolling at an angle ν calculated by the following formula:

$$\sin \nu = (l_1 + l_2)/R \operatorname{tg} \phi/2, \qquad (I)$$

where

l_1 is the distance from the center of a working stand to the center of a coupling measured along the axis of a roll;

l_2 is the distance from the center of a working stand to the center of another coupling, measured along the axis of rolling;

ϕ is the angle of rolling;

R is the radius of the circumference passing through the axes of the output shafts of the pinion stand.

4,206,623

METHOD OF AND APPARATUS FOR FEEDING ROD-SHAPED ELEMENTS SEQUENTIALLY IN SPACED RELATIONSHIP

Jan Kovar, Ricmanice, and Jan Drkal, Brno, both of Czechoslovakia, assignors to Vyzkumny ustav tvarecich stroju a technologie tvareni, Brno, Czechoslovakia

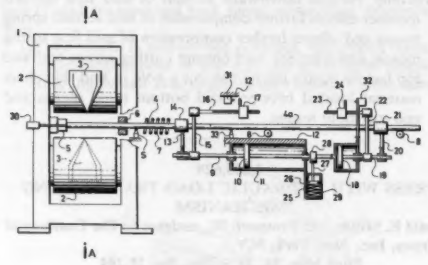
Filed Jan. 25, 1979, Ser. No. 6,801

Int. Cl.[2] **B21H** *9/00*

U.S. Cl. 72—108 **7 Claims**

1. Apparatus for the sequential forward feeding of rod-shaped elements in axially aligned relationship into a working machine having a working station, said machine requiring a gap between the first-worked element and the next supplied, second element to be worked, comprising means for feeding the first, worked element in the direction of its axis into the working station of the machine by means of the second element, means for shifting the second element forwardly for the length of the first, worked element, and means for moving the second element rearwardly, after the forward end of the first

element has reached a predetermined position in the working station of the machine, through a distance exceeding the elongation of the first, worked element due to its being worked upon by the machine.



4,206,624

SHIFTING DEVICE FOR CONTINUOUS MAGNETIC WEB

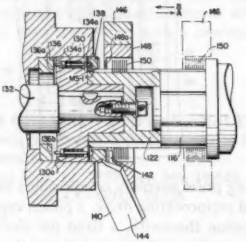
Koichi Asai; Tohsuke Kawada, both of Chiryu; Yoshiyuki Iwaki, and Ryozo Kuroda, both of Himeji, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1978, Ser. No. 923,398

Claims priority, application Japan, Jul. 6, 1977, 52-80837

Int. Cl.[2] H02K *15/00*; B21D *11/06*

U.S. Cl. 72—131 **7 Claims**



1. A device for winding a continuous magnetic web into a spiral and for then axially shifting the thus wound spiral, said device comprising:

a rotary spindle having axially opposite first and second ends;

means for feeding a continuous magnetic web onto said spindle at a position adjacent said first end thereof, and for, upon rotation of said spindle, forming said web into a spiral which accumulates spirally circumferentially around said spindle and in a direction toward said second end thereof;

a shifting member positioned to be axially movable of said spindle between a first position adjacent said first end of said spindle and a second position outwardly of said second end of said spindle;

said shifting member including guiding member means for, when said shifting member is in said first position thereof, guiding said spiral during the accumulation thereof around said spindle, and for, after the accumulation of a predetermined length of said web in the form of said spiral around said spindle, shifting said spiral axially of said spindle during movement of said shifting member from said first position thereof toward said second position thereof;

said guiding member means including means for contacting an axial end of said spiral which faces toward said first end of said rotary spindle; and

means for moving said contacting means from a first position maintaining said spiral inclined with respect to the axis of said rotaty spindle, when said shifting member is in said first position thereof, and a second position maintaining said spiral substantially perpendicular to said axis of said rotary spindle, when said shifting member moves from said first position thereof toward said second position thereof.

4,206,625

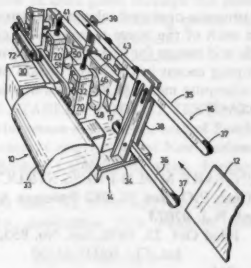
METHOD AND APPARATUS FOR SHAPING A STRIP

George Vegh, Toronto, Canada, assignor to Gybro Industries Ltd.

Filed Aug. 15, 1978, Ser. No. 933,860

Int. Cl.[2] B21D *5/08*

U.S. Cl. 72—181 **16 Claims**



1. An apparatus for forming a folded edge in an elongated, flat strip of material comprising:

a supporting structure,

a plurality of edge forming roller means mounted in said supporting structure at spaced intervals along a straight path, said roller means being adapted to progressively impart a shaped edge in an elongated edge of said strip as said strip is passed along said path; and means for guiding said elongated strip in a vertical disposition along said path with a vertically disposed flat surface of said strip adjacent said elongated edge; said means for guiding comprising an elongated support surface extending adjacent said path and adapted to supportingly contact said vertically disposed flat surface of said strip and maintain it in said vertical disposition.

4,206,626

EXTRUSION PRESS FOR EXTRUDING TUBES

Horst H. Groos; Urban Richardt, both of Metzkausen, and Siegfried Hoffmeier, Dusseldorf, all of Fed. Rep. of Germany, assignors to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Feb. 2, 1978, Ser. No. 874,631

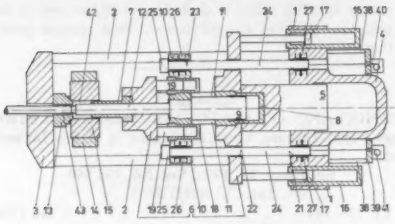
Claims priority, application Fed. Rep. of Germany, Feb. 4, 1977, 2704652

Int. Cl.[2] B21C *23/00, 23/10*

U.S. Cl. 72—265 **10 Claims**

1. An extrusion press for extruding tubes, the press including a counter platen, an extrusion die mounted on said counter platen, a cylinder cross-head, tension columns joining the counter platen and the cylinder cross-head, a movable cross-head able to be moved between the counter platen and cylinder cross-head, a billet container movable between the counter platen and the cylinder cross-head and a press stem carried by the movable cross-head for movement therewith to extrude a billet in the container through the die, the press also including a piercing device carried by the movable cross-head, which device comprises a piercing mandrel, a piston and cylinder

arrangement for driving said piercing mandrel relative to the movable cross-head, a piercing cross-bar fixed to said piercing mandrel, and axially movable mandrel stroke-limiting rods arranged parallel to the direction of movement of the movable cross-head and the mandrel, each rod being received in a bore in the piercing cross-bar and in a bore in the cylinder cross



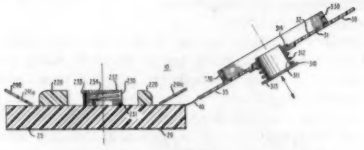
head, fluid pressure operated releasable clamping means being provided in each of the bores to releasably clamp the stroke-limiting rods and means for selectively applying fluid pressure to said clamping means in the bores of said piercing cross-bar and to said clamping means in the bores of said cylinder cross-head respectively.

4,206,627

UNITARY MOLD-PRESS STRUCTURE

Miguel A. Diaz, P.O. Box 95, 283 Paterson Ave., Apt. 3, East Rutherford, N.J. 07073

Filed Oct. 23, 1978, Ser. No. 953,635
Int. Cl.[2] B21D *33/00*
U.S. Cl. 72—334 **3 Claims**



1. A unitary mold-press structure for making shaped forms out of thin sheet material comprising:

a base portion including a lower base portion, a first edge, a second edge perpendicular to said first edge, and mold means;

a top portion including an upper base portion, a first edge, a second edge perpendicular to said first edge, and mold means;

hinge means associated with the respective first edges of said bottom portion and said top portion for allowing rotation of said top portion relative to said bottom portion;

whereby said thin sheet material located between said bottom mold means and said top mold means is formed and shaped when said top portion is rotated towards and pressed onto said bottom portion;

said bottom portion also includes cutting means further including: at least one vertically directed cutting member, the lower end of said cutting member being fixedly connected to said lower base portion; first spring means being concentric with said cutting member, the lower end of said first spring means being fixedly connected to said lower base portion;

said top portion also including handle means, said handle means further including holder means being perpendicular and movable relative to said upper base portion; a first annular member being fixedly connected to the upper end of said holder means; a second annular member being fixedly connected to the lower end of said holder means; and second spring means also being perpendicular to said upper base portion, said second spring means being located between said first annular member and said upper base portion;

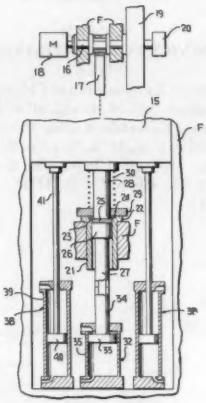
whereby vertical downward motion of said first annular member effects further compression of said second spring means and effects further compression of said first spring means, and whereby said bottom cutting means and said top handle means interact to cut a hole in said thin sheet material located between said bottom mold means and said top mold means.

4,206,628

PRESS WITH HYDRAULIC LOAD TRANSFERRING MECHANISM

Donald E. Miller, Mt. Prospect, Ill., assignor to The Continental Group, Inc., New York, N.Y.

Filed Mar. 16, 1979, Ser. No. 21,284
Int. Cl.[2] B21J *9/10*
U.S. Cl. 72—354 **10 Claims**



1. A forging press assembly comprising a ram actuatable by a mechanical reciprocating drive, a punch carried by said ram for reciprocation therewith, a fixed die sleeve for receiving said punch, a forging pad received in said die sleeve for cooperation with said punch, a forging cylinder supporting said forging pad, at least one load cylinder coupled to said ram for applying a forging load on said punch through said ram, and a hydraulic system coupled to said load cylinder and said forging cylinder, said hydraulic system including hydraulic lines for transferring hydraulic fluid between said forging cylinder and said load cylinder in response to movement of said ram and said forging pad, first means for introducing a low pressure hydraulic fluid to said load cylinder and said forging cylinder, and second means for increasing the pressure of the hydraulic fluid in at least said load cylinder during product forging.

4,206,629

BACK SHOE FOR A TUBE BENDER

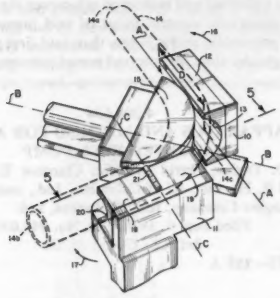
Samuel Grimaldo, Thousand Oaks, Calif., assignor to American Machine & Hydraulics, Inc., Newbury Park, Calif.

Filed Mar. 5, 1979, Ser. No. 17,712
Int. Cl.[2] B21D *7/06*
U.S. Cl. 72—389 **2 Claims**

1. In a tube bender in which first and second spaced back gates receive conventional back shoes each comprising a block having a cylindrical cut-out on one side of given axial length for engaging, respectively, axially spaced side wall portions of one side of a tube and wherein a radiused ram is positioned to engage against an opposite central side wall of the tube when

urged along an axis passing between the back gates, the back gates being swingable in opposite directions as the ram die moves along said axis between the back gates to thereby form a bend in the tube, an improved back shoe for substitution for one of said conventional back shoes, comprising, in combination:

(a) two blocks in side-by-side positions, each block having a cylindrical cut-out of one half said given axial length so that the overall axial length of both cut-outs is the same as



said given axial length of the cut-out in said conventional shoe, and

(b) coupling means for said blocks such that one of said blocks can be moved out of alignment with the other to leave a cylindrical cut-out tube engaging surface of one half the axial length of the conventional shoe cut-out to thereby enable a second bend closer to said first bend to be formed in said tube without interference with said improved shoe than is possible with a conventional back shoe.

4,206,630

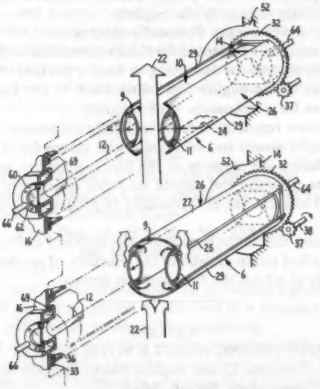
SAMPLE CHAMBER FOR GAS ANALYZER

Howard A. Powers, Sunnyvale, Calif., assignor to Econics Corporation, Cupertino, Calif.

Filed Mar. 12, 1979, Ser. No. 19,640

Int. Cl.² G01N *21/26*

U.S. Cl. 73—1 G **15 Claims**



1. A sample chamber for a gas analyzer for use in a duct containing the gases to be analyzed, comprising

flow directing means having a longitudinal axis extending generally centrally thereof, said flow directing means including a pair of spaced members opposing one another on opposite sides of said axis to define a passage between said members, with the surfaces each said member facing generally toward the other said member being convex, such that the passage between the two members is in the form of a converging-diverging throat;

outer housing means at least partially surrounding said flow directing means and having a longitudinal axis generally parallel to said flow directing means axis, said outer housing means having at least a pair of apertures therethrough on opposite sides of a plane which includes said outer housing axis, and said outer housing means being movable between one position in which said apertures are positioned across the ends of flow directing means passage and another position in which said apertures are spaced from said passage with non-apertured portions of said outer housing positioned across the ends of said flow directing means passage whereby, when the outer housing means is in the one position its apertures provide for free flow of gases through flow directing means passage and, when in the other position, the outer housing means serves to block free flow of duct gases through the passage; and

means for moving said outer housing means between said one position and said other position.

4,206,631

INFLATABLE PRODUCT TESTING

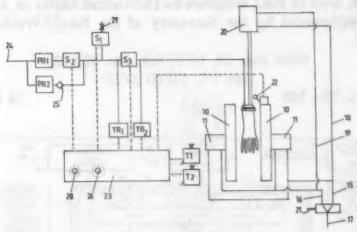
Karel J. Nysse; Hermanus J. Beentjes, both of Featherston, and Terence A. Mancer, Carterton, all of New Zealand, assignors to Batavian Rubber Company Limited, Featherston, New Zealand

Filed Mar. 30, 1979, Ser. No. 25,557

Claims priority, application New Zealand, Jun. 2, 1978, 187465

Int. Cl.² G01M *3/26*

U.S. Cl. 73—40 **25 Claims**



1. A method of testing a product capable of being inflated such as a surgical glove against leakage flaws and substantially weak spots which comprises the steps of:

(a) mounting the product in such a way that the same can be inflated at least partially through an intended opening thereof by applying a gas pressure thereinto,

(b) rigidly constraining the product against substantial inflation with constraints which in use do not substantially inhibit leakage of gas through leakage flaws and leakage flaws resulting from the breakage of substantially weak spots of said product,

(c) applying a gas pressure to said product so as to attain a first pressure within said product which said first pressure is a pressure that in the absence of said constraints would be desctructive of said product,

(d) reducing the pressure within said product upon its attaining said first pressure to a second pressure which itself is a pressure in the absence of said constraints which would be destructive of said product,

(e) detecting any gas pressure decrease within said product over a testing period commencing upon its attaining said second pressure, and

(f) rejecting said product as being defective owing to the

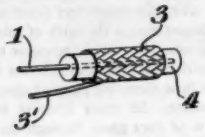
leakage flaws if said product fails to achieve said first pressure or upon reduction to said second pressure loses pressure unacceptably over said testing period.

4,206,632

LIQUID DETECTING DEVICE

Hirosuke Suzuki, 16-7, Kitaminemachi, Ohta-ku, Tokyo, 105, Japan

Filed Jan. 23, 1979, Ser. No. 5,712
Int. Cl.[2] G01M *3/16;* **G01R** *31/08;* **H01B** *7/32*
U.S. Cl. 73—40.5 R **7 Claims**



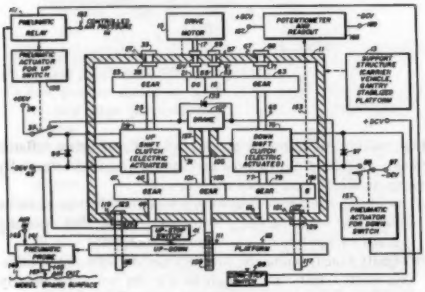
1. A liquid leak detecting device for detecting leaks from holding means for said liquid, said device being connected electrically to a resistance measuring sensor and display means, said device comprising at least two electrical conductors held in substantially parallel relationship and separated from each other by a continually porous polytetrafluoroethylene material having a powdered electro-conductive substance impregnated within the pores of said porous material.

4,206,633

SURFACE PROFILE FOLLOWER AND INDICATOR SYSTEM

John C. McKechnie, Maitland, and Paul D. Grimmer, Winter Park, both of Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,429
Int. Cl.[2] G01B *5/28*
U.S. Cl. 73—105 **24 Claims**



1. A surface profile follower and measuring system, comprising in combination:

a pneumatic probe adapted for effectively sensing the distance therebetween and a surface whose profile is being followed and measured, said pneumatic probe having a constant pressure pneumatic input, a pneumatic nozzle output directed toward the aforesaid surface, and a pneumatic control output;

a pneumatic relay having a constant air pressure input, a pneumatic control input connected to the pneumatic control output of said pneumatic probe, and a pair of pneumatic outputs, one of which produces air at a predetermined pressure only when the air received at the aforesaid pneumatic control input is less than a first preset pressure, the other of which produces air at a predetermined pressure only when the air received at the aforesaid pneumatic control input is greater than a second preset pressure, and neither of which produces air under pressure when the pressure of the air received at the aforesaid pneumatic control input falls between said first and second preset pressures; and

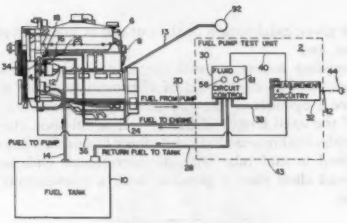
means connected to the pneumatic outputs of said pneumatic relay and said pneumatic probe for moving said pneumatic probe toward and away from the surface whose profile is to be followed and measured whenever the air supplied to the pneumatic control input of said pneumatic relay by said pneumatic probe is less than said first preset pressure and greater than said second preset pressure, respectively.

4,206,634

TEST APPARATUS AND METHOD FOR AN ENGINE MOUNTED FUEL PUMP

Dennis O. Taylor; David L. Reid; Clarence E. Kincaid, and Donald R. Haefner, all of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 6, 1978, Ser. No. 940,080
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—119 A **18 Claims**



1. Apparatus for testing the fuel pump of an internal combustion engine equipped with a pressure-time type fuel supply system wherein the engine speed may be controlled by adjusting the pressure of fuel supplied to the engine through the fuel supply system, comprising

(a) fuel inlet means adapted for fluid connection with the engine fuel pump for receiving the total fuel output of the fuel pump while the pump remains mounted on and mechanically driven by the engine;

(b) fuel outlet means fluidically connected with said fuel inlet means and adapted for fluid connection with the fuel supply system for supplying at least a portion of the fuel output of the engine fuel pump back to the fuel supply system for combustion in the engine;

(c) pressure regulator means fluidically connected with said fuel inlet means and said fuel outlet means for selectively regulating the pressure of the fuel supplied to said outlet means to cause the engine to drive selectively the fuel pump at each one of a plurality of predetermined speeds; and

(d) sensing means for measuring the delivery characteristics of the fuel pump at each of the plurality of predetermined speeds at which the fuel pump is driven.

4,206,635

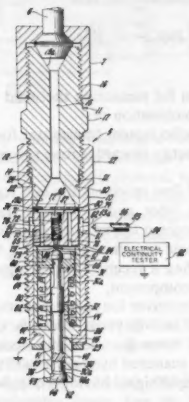
INJECTION TIMING NOZZLE WITH POPPET VALVE

Richard F. Teerman, Grand Rapids, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 26, 1979, Ser. No. 15,068
Int. Cl.[2] G01M *15/00*
U.S. Cl. 73—119 A **3 Claims**

3. A fuel injection timing nozzle including a housing means of electrical conductive material having a fuel inlet passage in communication with an axial extending fuel passage therein

that terminates in a nozzle outlet at one end of said housing means, said fuel passage defining an annular valve seat closely adjacent to said nozzle outlet; a poppet valve of conductive material operatively associated with said fuel passage for controlling flow therethrough; said poppet valve including a stem provided with a head at one end and a closure member at the opposite end for engagement with said valve seat, said poppet valve being slidably journaled in said housing means between a first position at which said closure member is seated against said valve seat in electrical contact therewith and a second position at which said closure member is axially spaced from said valve seat and out of electrical contact therewith; spring means operatively associated with said head of said poppet valve for normally biasing said poppet valve to said first position; an axially apertured, spring cage means positioned in said



housing means adjacent said head of said poppet valve; said spring cage means including an electrically conductive means and a means to electrically insulate said electrically conductive means from said housing means, and an electrically conductive, spring biased contact means movably supported by said spring cage means in electrical contact engagement with said electrical conductive means of said spring cage means and with poppet valve when said poppet valve is in said first position and adapted to be out of electrical contact with said poppet valve when said poppet valve is in said second position; said housing means having at least one side aperture therethrough transversely aligned with said spring cage means to permit the insertion of the probe of an electrical continuity tester therethrough into electrical contact with said electrically conductive means of spring cage means.

4,206,636

FOOT PEDAL FORCE TRANSDUCER

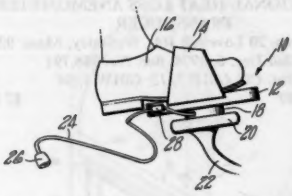
Tony D. Hendrix, Windsor, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 22, 1978, Ser. No. 972,550
Int. Cl.[2] G01L *5/28*
U.S. Cl. 73—132 **1 Claim**

1. A foot pedal force transducer for providing signals representative of the force applied by the foot of a human operator to a brake pedal of an automobile, comprising:

a slipper having a sole with an inner surface and an outer surface, and having an upper portion attached to the sole and adapted for releasably engaging the foot of the operator to the inner surface in a region thereof forming a force transmitting portion of the sole, said upper portion having an exterior surface with a target band disposed thereon in register with said force transmitting portion of said sole; and

strain gauge means having two parallel planar major surfaces including a mounting surface and a bearing surface and responsive to compressive loading therebetween, said gauge means being attached at said mounting surface to said outer surface of said sole in a region thereof coextensive with said force transmitting portion of said sole, said bearing surface being adapted for contact with the brake pedal, said target band providing a visual indication of said gauge position to permit operator alignment of said bearing surface with the brake pedal, said gauge means



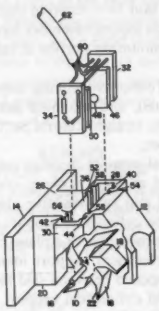
providing a transmitting path for the force applied by the operator, from said force transmitting portion of said sole to the brake pedal, said gauge means providing, in response to the compressive loading between said mounting surface and said bearing surface resulting from the transmission of the force applied by the operator, a signal at a magnitude representative of the force applied to the brake pedal.

4,206,637

MARINE SPEEDOMETER

Gary W. Pankonien, 16109 Seattle, Houston, Tex. 77040

Filed Oct. 20, 1978, Ser. No. 953,272
Int. Cl.[2] G01C *21/10*; G01D *5/34*
U.S. Cl. 73—187 **6 Claims**



1. A transducer adapted for mounting to a marine vehicle, comprising:

a housing having first and second sidewalls defining an interior cavity therebetween and having an opening through the bottom;

means for mounting the housing to a marine vehicle;

a paddle wheel having a plurality of vanes, said paddle wheel being mounted for rotation within the interior cavity of the housing;

a source of radiant energy carried on easily detachable means in said housing and mounted on at least one guide means adjacent the paddle wheel on one sidewall of the housing for establishing a beam of radiant energy directed across the interior cavity toward the opposite sidewall so as to be interrupted by each vane of the paddle wheel upon rotation thereof;

a radiant energy responsive element carried on separate

easily detachable means mounted on at least one guide means in said housing and adjacent the paddle wheel on the sidewall of the housing opposite the radiant energy source and disposed in substantial alignment therewith so as to be impinged by the radiant energy beam; and

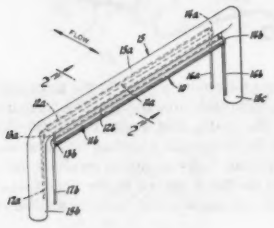
means connected to the radiant energy responsive element for producing an electrical signal indicative of the rotational movement of the paddle wheel.

4,206,638

DIRECTIONAL HEAT LOSS ANEMOMETER TRANSDUCER

Robert S. Djorup, 20 Lovewell Rd., Wellesley, Mass. 02181

Filed Dec. 6, 1978, Ser. No. 966,792
Int. Cl.[2] G01P *5/12*; G01W *1/04*
U.S. Cl. 73—189 **17 Claims**



1. A directional heat loss anemometer transducer comprising:

(a) at least two similar, thermally and physically separated cylindrical resistive electrical conductors;

(b) each of said conductors having a length at least equal to the largest cross section dimension of the conductor;

(c) a cylindrical support member centrally disposed between and alongside said two resistive electrical conductors;

(d) said cylindrical support member having a straight central portion and a mounting portion at each end of said central portion;

(e) said electrical conductors being disposed as a parallel pair finitely separated, and mounted parallel to and in close proximity to the straight central portion of the cylindrical support member;

(f) said cylindrical support member straight central portion being disposed so that a plane containing the parallel central axes of said two resistive electrical conductors is spaced from the cylindrical support member central portion and is perpendicular to a plane containing the central axis of said cylindrical support member straight central portion and disposed between said two resistive electrical conductors, said cylindrical support and resistive electrical conductor axial centers defining an acute angle between center lines through each of said resistive electrical conductors and said cylindrical support when viewed in cross section;

(g) a thermo insulating connective bridging means operatively disposed between each of said two resistive electrical conductors and said support member straight central portion, and closing the space between said resistive electrical conductors and said support member straight central portion, thereby preventing connected flow completely around one conductor of said two resistive electrical conductors, independent of the other conductor;

(h) said two resistive electrical conductors being supported in the protected lee of the support member straight central portion; and,

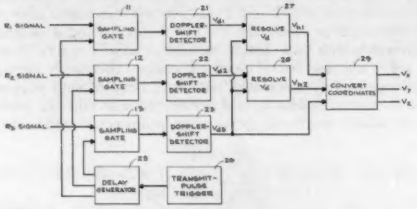
(i) each of said resistive electrical conductors being provided with electrical connection means, whereby each resistive electrical conductor can be electrically heated by an electrical current passed through each conductor.

4,206,639

DOPPLER ACOUSTIC WIND SENSOR

Martin Balser, Encino, Calif., assignor to Xonics, Inc., Van Nuys, Calif.

Filed Nov. 25, 1977, Ser. No. 854,782
Int. Cl.[2] G01W *1/02*
U.S. Cl. 73—189 **7 Claims**



1. In a system for measuring the wind velocity at a specific location, the combination of:

an acoustic echo system transmitter for directing a beam of acoustic energy toward a zone spaced from said transmitter;

a plurality of first receivers for said transmitter and spaced from each other and from said transmitter, with each receiver directed toward said zone for receiving acoustic energy of said transmitter scattered by wind in said zone and providing a receiver output signal having a doppler frequency component;

an additional receiver for said transmitter and located at said transmitter and directed towards said zone along the transmitter beam for receiving acoustic energy of said transmitter scattered by wind in said zone and providing a receiver output signal having a doppler frequency component; and

signal processor means having the receiver output signals as inputs for generating processor output signals each varying as a function of the velocity of the wind in said zone along one of three defined coordinates, said signal processor means including

a separate channel for each receiver output signal, with each channel including a sampling gate and doppler shift detector, and

a delay generator providing control signals to each of said sampling gates for introducing delays in each channel with each delay varying as a function of the position of each corresponding receiver with respect to the transmitter.

4,206,640

MAGNETIC FLOWMETER

Kazuie Suzuki, Tokyo, Japan, assignor to Hokushin Electric Works, Ltd., Tokyo, Japan

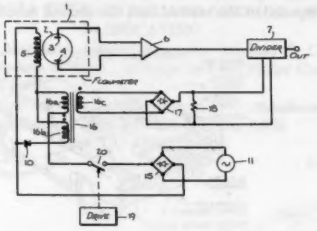
Filed Apr. 28, 1978, Ser. No. 901,095
Int. Cl.[2] G01F *1/60*
U.S. Cl. 73—194 EM **7 Claims**

1. In a magnetic flowmeter provided with a flow tube through which the fluid to be metered is conducted to intercept a magnetic field established by an electromagnet having an excitation coil, thereby inducing a signal depending on flow rate in a pair of electrodes mounted at diametrically-opposed positions in said tube, the combination comprising:

A a current supply network to supply to said coil a low-frequency excitation current derived from a commercial power line source having a predetermined frequency, said excitation current having a waveform created by a current that is interrupted at an on-off rate that is higher than said predetermined frequency to produce an on-off current that is modulated by a low-frequency wave;

B means producing a reference voltage, said means including a current transformer having a pair of primary wind-

ings and a secondary winding, one of said primary windings being interposed between said current supply network and said coil, whereby said excitation current flows therethrough, said other primary winding being so connected whereby a current resulting from the counter electromotive force generated in said coil flows therethrough in a direction opposed to the flow of current in



said first primary winding whereby a reference-voltage a-c signal is yielded by said secondary winding from which said reference voltage is derived; and

C means responsive to said reference voltage and coupled to said electrodes to produce an output signal in which the influence of fluctuations in said excitation current on said flow rate signal is eliminated.

4,206,641

ELECTROMAGNETIC FLOW METER

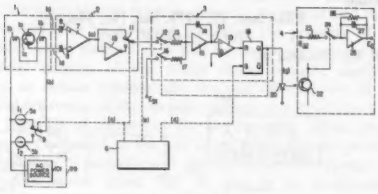
Keisuke Takada, Kodaira, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,685

Claims priority, application Japan, Aug. 10, 1977, 52-95719

Int. Cl.[2] G01F *1/60*

U.S. Cl. 73—194 EM **7 Claims**



1. An electromagnetic flow meter having a flow rate detector excited by a square wave exciting current produced by a power supply, for measuring the flow rate of a fluid, which comprises:

an AC amplifier for amplifying the output of said flow rate detector;

pulse width modulation means for integrating the amplified output of said flow rate detector from an output of the AC amplifier during a time period when transients produced by said square wave exciting current have substantially subsided and for converting the integrated output of said AC amplifier into a pulse output having a pulse width proportional to the amplitude of the output of said AC amplifier, said pulse width modulation means comprising a double integration circuit having an input integration time constant selected such that the pulse output of said pulse width modulation means is provided during the period of time when the output of said flow rate detector is transiently varied; and

measurement means for measuring the pulse width of the output pulse of said pulse width modulation means.

4,206,642

FLOWMETER

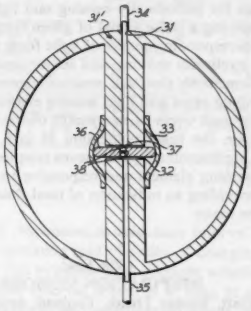
Kenneth E. Bearcroft, Stortford, England, assignor to ITT Industries, Incorporated, New York, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,223

Claims priority, application United Kingdom, Jan. 10, 1978, 00862/78

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 VS **1 Claim**



1. A fluid flow sensor device comprising: an elongated bluff body adapted to induce vortex shedding when placed in a flowing fluid; a longitudinal bore in said body; a transverse bore in said body communicating with said longitudinal bore; first and second optical fibers arranged to transmit light signals therebetween, said fibers being located in said longitudinal bores; means located in said transverse bore and adapted; in response to pressure differentials across the body surface, to vary the optical coupling between said fibers thereby producing a light output signal modulated at a frequency corresponding to the rate at which vortices are shed, said pressure responsive means including flexible diaphragms located one at each end of said transverse bore; and a rigid shaft located in a position movable in response to diaphragm movement, said shaft being profiled so as to obstruct light signals transmitted between said fibers for a portion of its travel.

4,206,643

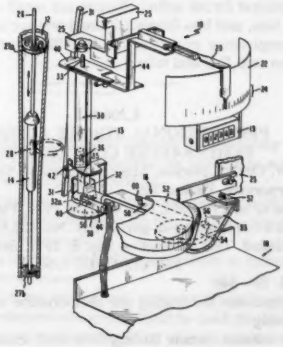
FLOW TOTALIZER

Harold H. Phillips, Philadelphia, and Milton Mollick, Allentown, both of Pa., assignors to Ametek, Inc., New York, N.Y.

Filed Sep. 20, 1978, Ser. No. 944,157

Int. Cl.[2] G01F *1/24, 15/07*

U.S. Cl. 73—206 **9 Claims**



3. In a flow meter of the type having a follower element

mounted therein for movement responsive to the velocity of fluid flowing through said meter, the improvement comprising a position element mounted in said meter and coupled to said follower element for movement along a predetermined path in response to movement of said follower element, a sensor head mounted in said meter including a light source and light sensing element responsive to light impinging thereon for coverting light to an electrical signal mounted in said sensor head in spaced apart relationship to permit at least a portion of said position element to pass therebetween, means coupled to said light source for periodically turning said light source on and off by supplying a pulse signal of given frequency thereto to produce corresponding pulses of light from said light source, means for cyclically moving said sensor head relative to said position element so that said position element interrupts the light impinging upon said light sensing element for a period of time during each cycle of movement of the sensing head dependent upon the relative location of said position element along said predetermined path, means coupled to the output of said light sensing element and responsive to the signal therefrom for providing an indication of total fluid volume passing through the meter.

4,206,644

RESPIRATION SENSORS

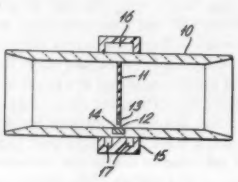
Adam S. Platt, Bushey Heath, England, assignor to National Research Development Corporation, London, England

Filed Sep. 26, 1978, Ser. No. 946,073

Claims priority, application United Kingdom, Sep. 29, 1977, 40531/77

Int. Cl.[2] G01F *1/68;* A61B *5/08*

U.S. Cl. 250—231 P **7 Claims**



1. A respiration sensor for use with medical ventilation apparatus, comprising a flap mounted along a part of its edge in a tube, the flap being both resiliently and magnetically biassed towards a datum position extending transversely across the interior of the tube, said flap being movable in opposite senses from the datum position in response to gas flow through the tube, and means for selectively detecting movement of the flap in said opposite senses wherein the mass of said flap is such that gravitational forces acting thereon are small relative to those of said bias, said bias forces are small relative to those resulting from respiratory pressures on said flap, and there is a gap between said flap and tube.

4,206,645

PROPORTIONAL STROKE AUTOMATIC TEMPERATURE CONTROL SYSTEM

John W. Orcutt, Norton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 501,711, Aug. 29, 1974, Pat. No. 4,063,682, which is a continuation-in-part of Ser. No. 422,954, Dec. 7, 1973, abandoned. This application Sep. 6, 1977, Ser. No. 830,530

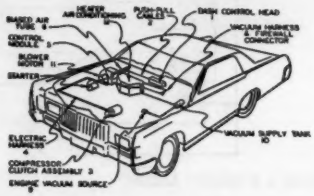
Int. Cl.[2] G01K *1/08*

U.S. Cl. 73—349 **7 Claims**

1. Apparatus for biasing the temperature of a fluid stream comprising

inner tubular means having first and second portions, an entrance at an end of the first portion and an exit at an end of the second portion, the first tubular portion being defined by a wall which permits heat conductivity therethrough,

outer tubular means having first and second portions surrounding the inner tubular means and generally coextensive therewith, the first tubular portion of the outer tubular means separated from the second tubular portion of the outer tubular means by a seal, the first tubular portion of the outer tubular means having two ends, a fluid entrance being adjacent the seal at one end and a fluid exit being disposed at the second end; the second tubular portion of



the outer tubular means having two ends, a fluid entrance being located at one end in communication with the exit of the second portion of the inner tubular means, and an exit disposed at the other end whereby fluid is allowed to enter the inner tubular means and pass through the first and second portions of the inner tubular means into the second portion of the outer tubular means to the exit of the second portion of the outer tubular means and a separate fluid path extends through the second portion of the outer tubular means.

4,206,646

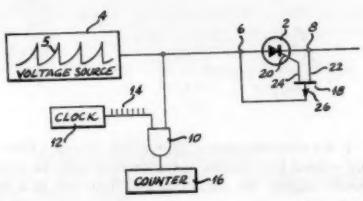
TRANSDUCER COMBINING COMPARATOR OR CONVERTER FUNCTION WITH SENSOR FUNCTION

Gordon B. Spellman, Mequon; Stanley V. Jaskolski, Sussex; Herman P. Schutten, Elm Grove, and Robert W. Lade, Waukesha, all of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 27, 1978, Ser. No. 946,179

Int. Cl.[2] G01K *7/00*

U.S. Cl. 73—362 SC **7 Claims**



1. A transducer comprising:

a condition responsive single switch element exhibiting:

a breakover voltage as a known function of an analog condition being sensed;

a true abrupt switching characteristic at said breakover voltage between a nonconductive off state and a conductive on state; and

a region of condition sensitivity with respect to said breakover voltage which is wide enough to afford sufficient range;

a voltage source supplying voltage to said switching element as a known monotonic function of time; and

means for measuring time with respect to switching of said switching element;

wherein the measured time between said switching and a reference point corresponds to a designated supply volt-

age value due to the known relationship between source voltage and time, and wherein said designated supply voltage value corresponds to a particular value of said condition being sensed because of the known relationship between said breakover voltage and said condition, whereby said measured time indicates the value of said condition.

4,206,647

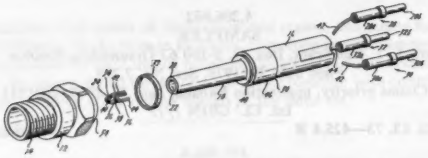
TITANIA THERMISTOR AND METHOD OF FABRICATING

Stanley R. Merchant, Garden City, and Michael J. Cermak, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 839,700, Oct. 5, 1977, abandoned. This application Jan. 25, 1979, Ser. No. 6,958

Int. Cl.[2] G01K 7/22

U.S. Cl. 73—362 AR **2 Claims**



1. A process for generating an electrical resistance variation in a sensor element which is a function of the temperature of the sensor element, above about 700° F., to which the sensor element is exposed and which is substantially independent of the partial pressure of oxygen in the environment to which the sensor element is exposed, the process comprising the steps of: fabricating the element from a metal oxide ceramic material, the metal oxide ceramic material when porous having an electrical resistance which varies substantially as a function of its temperature above about 700° F. and which also is a function of the partial pressure of oxygen of the environment to which the sensor element is exposed when at a temperature above about 700° F.; embedding electrodes in the sensor element in mutually noncontactive relation, thereby, to permit said resistance variation to be detected; reducing the porosity of the fabricated sensor element such that its density approaches the theoretical density of the metal oxide ceramic material, thereby, to reduce substantially the rate of variation of the electrical resistance of the ceramic element as a function of the partial pressure of oxygen in the environment of the sensor element as compared to the rate of variation thereof prior to such reduction of porosity; and placing the sensor element at a temperature above about 700° F. and in an environment wherein the partial pressure of oxygen varies.

4,206,648

IMPEDANCE MEASURING CIRCUIT

James W. Tuska, Pennington, and Anthony D. Robbi, Hopewell, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Feb. 26, 1979, Ser. No. 15,055

Int. Cl.[2] G01K 7/24

U.S. Cl. 73—362 AR **10 Claims**

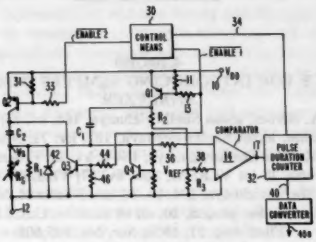
1. An impedance measuring circuit comprising:

a measurement terminal to which one end of said impedance is connected;

first and second supply terminals for receiving an operating voltage therebetween, the other end of said impedance being connected to said first supply terminal;

a plurality of charging means connected between said measurement and second supply terminals for supplying respective charging currents through said impedance, each charging means having a respective time constant in conjunction with said impedance, each of said charging means including means for selective operation thereof;

time interval means coupled to said impedance, responsive to first and second predetermined voltage levels at said measurement terminal for measuring the time interval between the occurrence of said first and second voltage levels, said time interval means having a time interval output which is proportional to said respective time constant over a range; and



control means responsive to said time interval output for selectively operating said plurality of charging means so as to select that available time constant which provides a measured time interval which is as long as possible yet within the range of said time interval means, thereby fully utilizing the resolution capability of said time interval means.

4,206,649

ELECTRONIC THERMOMETER

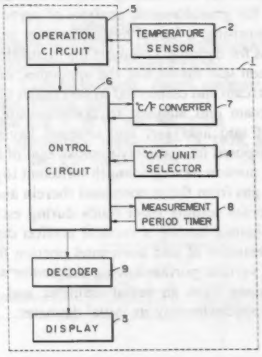
Akihiro Nagaie, Nagaokakyo, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Nov. 13, 1978, Ser. No. 959,481

Claims priority, application Japan, Nov. 11, 1977, 52-151436[U]

Int. Cl.[2] G01K 7/24

U.S. Cl. 73—362 AR **6 Claims**



1. An electronic thermometer capable of displaying a body temperature in a plurality of temperature units in an automatically selectable sequence, comprising:

means for measuring a body temperature which includes a temperature sensor and a means for detecting the completion of each measurement;

means for displaying said body temperature as measured by said measuring means;

means for selecting one of said temperature units in which said body temperature is displayed by said display means;

means responsive to the completion of each measurement as detected by said detecting means for setting a measuring time period; and,

control means associated with said means for selecting a temperature unit for causing said display means to display said body temperature in one of said temperature units during said measuring time period and in another of said temperature units after said measuring time period.

4,206,650

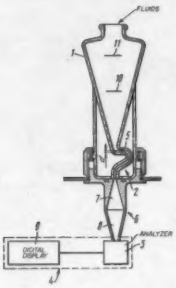
DEVICE FOR INTRODUCING SAMPLES INTO FLUID ANALYZER

Viktor A. Berber, ulitsa Shelkovichnaya, 184, kv. 65; Evgeny S. Pervushin, ulitsa Shelkovichnaya, 182, kv. 71; Marat N. Jushunev, ulitsa Shelkovichnaya, 184-a, kv. 22; Ernest M. Garanin, ulitsa 20 let VLKSM, 100, kv. 17; Vladimir G. Kholin, ulitsa Shelkovichnaya, 194, kv. 30, and Khafiz M. Murtazin, 6 Internatsionalny proezd, 20, all of Saratov, U.S.S.R.

Filed Aug. 21, 1978, Ser. No. 935,503

Int. Cl.[2] G01N *1/20, 21/00*

U.S. Cl. 73—421 R **5 Claims**



1. A device for introducing samples into an analyzer of an apparatus for granulometric analysis of particles contained in fluids, comprising: a funnel having an inlet and an outlet; and wall means for defining a channel for establishing communication between said funnel and the apparatus, said channel having an upstream end connected to said outlet of said funnel and a downstream end adapted to communicate with a supply channel of said analyzer, said channel having a horizontal portion, disposed immediately downstream of said funnel, said horizontal portion having a length sufficient to allow escape of entrapped gas from fluids contained therein and to collect and retain particles settling from fluids during escape of the gas, and said channel having a vertical portion disposed immediately downstream of said horizontal portion for agitating the fluids, said vertical portion having a diameter which first gradually increases from an initial diameter and then gradually reduces to approximately its initial diameter.

4,206,651

SLIDING SLEEVE SAMPLER

Joseph J. Boron, Medina, Ohio, assignor to Rossborough Manufacturing Co., Avon Lake, Ohio

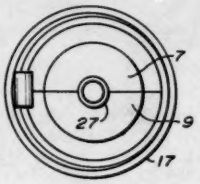
Filed Nov. 30, 1978, Ser. No. 964,931

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—425.4 R **3 Claims**

1. In an apparatus for taking a sample of molten metal and including a plurality of separable mold forming elements which cooperate to form a mold chamber and wherein said mold forming elements are mounted within a first containment member, the improvement comprising:

a second member slideably engaging and telescoped around said first member; and,



a sample tagging member being removably secured by and between said first containment member and said second member and extending into said mold chamber.

4,206,652

SAMPLER

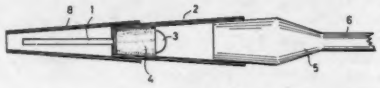
Lars A. T. Kumbrant, Box 23, S-190 63 Örsundsbro, Sweden

Filed Jan. 29, 1979, Ser. No. 7,205

Claims priority, application Sweden, Jan. 30, 1978, 7801111

Int. Cl.[2] G01N *1/12*

U.S. Cl. 73—425.4 R **3 Claims**



1. Sampler for drawing samples from melt comprising a sleeve in the form of a truncated cone, an inlet tube extending into the end of said sleeve having the smaller diameter, said tube extending substantially along the longitudinal axis of said sleeve, the end of said sleeve having the larger diameter being open to receive the holder part of a sampling lance the surface of which is tapered to mate with a corresponding tapered surface of said sleeve to sealingly attach said sleeve to said holder part, and a sample container placed in said sleeve at its end having the smaller diameter, said inlet tube extending into said sample container.

4,206,653

ULTRASONIC APPARATUS

Christopher A. G. LeMay, Osterley, England, assignor to E M I Limited, Hayes, England

Continuation of Ser. No. 727,128, Sep. 27, 1978, Pat. No. 4,137,775. This application Oct. 6, 1978, Ser. No. 949,124

Claims priority, application United Kingdom, Oct. 2, 1975, 40283/75; Aug. 4, 1976, 32434/76; Sep. 15, 1976, 38155/76

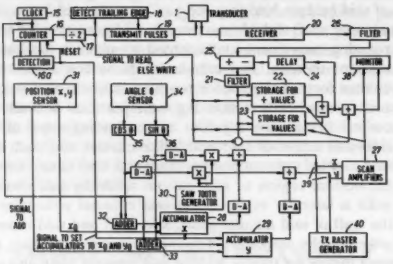
The portion of the term of this patent subsequent to Feb. 6, 1978, has been disclaimed.

Int. Cl.[2] G01N *29/04*

U.S. Cl. 73—602 **4 Claims**

1. An apparatus for examining a body by means of ultrasonic energy, including: ultrasonic transducer means comprising at least one transmitting transducer, arranged to direct ultrasonic energy into a region of the body from a plurality of different dispositions therearound; at least one receiving transducer, which may also be the transmitting transducer, arranged to receive ultrasonic energy reflected from locations in the body to provide, for each of said positions of the transmitting transducer, at least one set of output signals representing integrals of reflection of said energy towards said receiving transducer for respective lines of reflecting locations, the lines being spaced apart from each other and at different distances from the transmitting transducer and the respective propagation times to the respective reflecting locations of any given line being the same;

and processing means for providing a representation of the distribution of reflection coefficients in said region, the processing means including a data store representing said region and having a matrix of storage locations, one for each of a



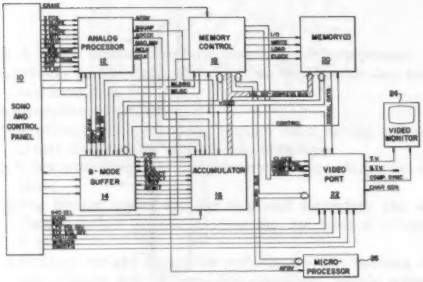
plurality of elements of the body in said region, and means for distributing to the storage locations, corresponding to elements intersected by each line of reflecting locations, a value related to the output signal for the respective line together with contributions from other output signals of the same set.

4,206,654

VIDEO DISPLAY CONTROL FOR DIAGNOSTIC SCANNERS

John T. Keller, 38137 Poplar Dr., Willoughby, Ohio 44094; Lawrence P. Madson, 6966 S. Eudora St., Littleton, Colo. 80122, and Richard P. Kolman, 1487 S. Humboldt, Denver, Colo. 80210

Filed Oct. 19, 1978, Ser. No. 952,771
Int. Cl.² G01N *29/00*
U.S. Cl. 73—620 **18 Claims**



1. In an ultrasonic scanner comprising a transducer for emitting ultrasonic waves into at least a planar region of a patient defined by an array of subregions separated by subregion boundaries and transforming echoes received from said planar region into electronic diagnostic values, means for producing an indication of the position of said transducer, means for producing an indication of the angular orientation of said transducer, a memory means having a plurality of addresses corresponding to the subregions for storing each diagnostic value at an address corresponding to the represented subregion, display means for displaying the diagnostic values stored in said memory means and memory address generating means receiving the position indication and angular orientation indication for generating the memory address for the diagnostic values corresponding to each echo, the address generating means comprising:

an analog processor comprising means for receiving analog position indication; means for receiving analog angular orientation indications, analog-to-digital conversion means for converting analog position indications and analog angular orientation indications into a digital representation, said analog-to-digital conversion means operatively connected with the analog position indication receiving means and the analog angular orientation receiving means, and timing means for producing timing signals indicating the interval beween each ultrasonic emission and the receipt of echoes;

an accumulator including means for producing from said digital representation and said timing signals a signal indicating the crossing of a subregion boundary, said accumulator operatively connected with said analog processor to receive said digital representation and said timing signals;

a buffer including buffer memory means for temporarily storing said diagnostic values and said subregion boundary crossing signals in at least one memory, said buffer means operatively connected with said analog processor and said accumulator means;

said buffer including means for separating said diagnostic values from said boundary crossing signals, said separating means operatively connected to said memory means; means for transferring said diagnostic values to said main memory, said transfer means operatively connected with said separating means and said main memory; means for producing counting pulses in response to each boundary crossing signal, said counting pulse means operatively connected with said separating means;

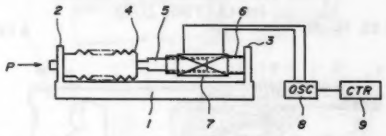
said accumulator further including main memory address generating means for generating a main memory address for each diagnostic value transferred from said buffer memory means to said main memory means by said transfer means, said address generating means operatively connected with said analog processor for receiving the digital representation to determine a starting address and operatively connected with said buffer for receiving said counting pulses to change the address for each boundary crossing.

4,206,655

PRESSURE SENSOR WHICH CAN COMPENSATE FOR TEMPERATURE VARIATION

Ryuichi Miyamae, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 9, 1979, Ser. No. 2,215
Claims priority, application Japan, Jan. 11, 1978, 53-2100
Int. Cl.² G01L *19/04*
U.S. Cl. 73—708 **7 Claims**



1. A pressure sensor comprising:

an oscillator;

a pressure-to-impedance transducer for varying an oscillation frequency of said oscillator in response to variations of a pressure to be detected;

supporting means for supporting said pressure-to-impedance transducer, said supporting means functioning to absorb a thermal expansion of said pressure-to-impedance transducer mounted thereon; and

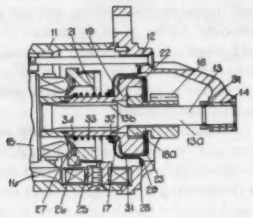
said supporting means comprises a supporting table having a specific coefficient of expansion and shape to achieve a thermal expansion substantially identical with the thermal expansion of said pressure-to-impedance transducer.

4,206,656

STARTER MOTOR

John D. Hollyoak, West Midlands, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jun. 29, 1978, Ser. No. 920,243
Claims priority, application United Kingdom, Jul. 1, 1977, 27717/77
Int. Cl.[2] F02N 15/06
U.S. Cl. 74—6 5 Claims



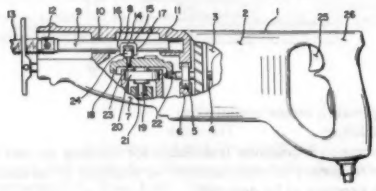
1. A starter motor, for an internal combustion engine, including a housing, a shaft rotatable in the housing by an electric motor, a pinion gear wheel assembly carried by the shaft, the pinion gear wheel assembly comprising a pinion gear wheel and a roller clutch, the assembly being movable axially relative to the shaft between a rest position and an operative position and the roller clutch transmitting rotational movement of the shaft in one direction to the gear wheel to rotate the gear wheel and including an elongate sleeve through which the shaft extends and a cup-shaped part at one end of the sleeve into which a part associated with the gear wheel extends and within which the rollers, springs and cam forms of the clutch are located, said sleeve being of smaller diameter than said cup-shaped part, an annular seal encircling and sealingly engaging the outer cylindrical surface of said sleeve and an annular barrier member, said barrier member being sealingly engaged at its outer periphery with the housing, and, a compression spring, said compression spring encircling the sleeve and acting at one end against an abutment carried by the sleeve, the spring acting at its other end against the barrier member, the spring urging the pinion gear wheel assembly to its rest position.

4,206,657

POWER DRIVEN TOOL HAVING A RECIPROCATING SHAFT ARRANGEMENT AND METHOD OF ASSEMBLY

Bernhard Palm, Fallston, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 19, 1977, Ser. No. 843,571
Int. Cl.[2] F16H 21/18
U.S. Cl. 74—50 4 Claims



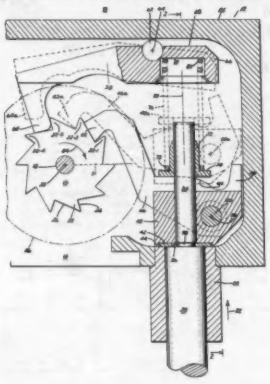
1. A power driven tool for reciprocating a cutting element such as a saw blade or the like comprising:
a motor housing;
drive means mounted in said motor housing;
a gear case connected to said motor housing;
a shaft arrangement arranged in said gear case, the shaft arrangement including:
a U-shaped channel yoke having two leg walls and a base mutually connecting said leg walls, said U-shaped channel yoke also having a longitudinal axis parallel to said leg walls and said base, said U-shaped channel yoke having two slots formed therein extending clear through said base so as to define three bridges one adjacent the other, each of said bridges bridging the gap between said leg walls,
an annular shaft slidably mounted in said gear case for reciprocating movement and adapted to receive the cutting element thereon, said annular shaft having a U-shaped cut-out formed therein for receiving said channel yoke in such a manner that said leg wall portions beneath the central bridge are adjacent corresponding ones of the side-wall edges of said notch-like cut-out and such that said channel yoke engages said annular wall in said slots at the bottom region of said cut-out whereby said channel yoke is laterally supported at said channel yoke base by the wall of said annular shaft, said shaft and said channel yoke thereby conjointly defining a common interface, and
joining means for tightly joining said channel yoke and said shaft at said interface; and,
eccentric means arranged in said gear case connecting said drive means to said U-shaped channel yoke for reciprocating said shaft arrangement.

4,206,658

ROTARY RATCHET MECHANISM

Robert W. Herr, Fort Wayne, Ind., assignor to Bowmar Instrument Corporation, Fort Wayne, Ind.

Filed Jul. 28, 1978, Ser. No. 929,190
Int. Cl.[2] G01L 5/28; E21B 49/00
U.S. Cl. 74—128 10 Claims



1. In a rotary ratchet mechanism including a toothed ratchet wheel mounted on a support member for rotation about a first axis, each tooth of said wheel having a driving portion and an inclined portion, a driving dog at one end of a lever member and adapted to engage a driving portion of a said tooth thereby to rotate said wheel in one direction, said lever member being pivotally connected to a pivot member at a point spaced from said one end, said pivot member being linearly movable from a first position to a second position along a second axis spaced from said first axis and normal to a plane including said first axis thereby to move said driving dog in a direction opposite said one direction from a first position with said driving dog engaging the driving portion of one tooth to a second position engaging the driving portion of another tooth, spring means for returning said pivot member to said first position thereof thereby to return said lever member and driving dog from said second positions to said first positions to rotate said wheel in said one direction by a predetermined incremental amount, and an anti-reversing dog adapted to engage the driving portion of

one tooth thereby to prevent rotation of said wheel in the opposite direction; the improvement wherein said pivot point in said first position of said pivot member is spaced from said second axis on the side thereof remote from said first axis, said anti-reversing dog being at one end of a second lever member pivotally connected to said support member at a second point spaced from said one end thereof, said second pivot point being spaced from the other side of said plane and spaced from said second axis on the side thereof toward said first axis, said spring means comprising a single spring acting on said pivot member and both said lever members thereby to bias said driving dog into engagement with a driving portion of a said tooth and to bias said second lever member in a direction to urge said anti-reversing dog into engagement with a driving portion of a said tooth.

4,206,659

VARIABLE V-BELT DRIVE FOR A VEHICLE

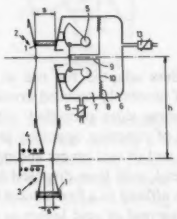
Jan Rijsdijk, Eersel, Netherlands, assignor to Volvo Car B.V., Geldrop-Eindhoven, Netherlands

Filed Apr. 6, 1978, Ser. No. 893,963

Claims priority, application Netherlands, Apr. 15, 1977, 7704138

Int. Cl.[2] **G01F** *1/06, 1/10*

U.S. Cl. 74—230.17 E **10 Claims**



1. A V-belt transmission for a motor vehicle comprising:

a primary pair of discs, including one displaceable disc and one fixed disc;

a secondary pair of discs;

said primary and secondary pairs of discs having a fixed center distance and variable disc openings;

a V-belt extending over said primary and secondary pairs of discs;

spring biasing means for pinching said secondary pair of discs together thereby maintaining the tension of said V-belt;

centrifugal weight means for varying the disc opening of said primary pair of discs, said centrifugal weight means overcoming said spring biasing means for creating a first compressive force during acceleration for urging said displaceable disc toward said fixed disc whenever a first predetermined RPM is exceeded and thereby effecting a reduction in transmission drive ratio above said first predetermined RPM;

inner and outer pressure chambers associated with said displaceable disc for urging said displaceable disc toward or away from said fixed disc by varying the pressure in said inner and outer pressure chambers;

brake actuated means for applying manifold pressure to said pressure chambers during deceleration to provide an expansive force to said primary pair of discs and thereby ensure a rapid and complete increase in transmission drive ratio when the motor vehicle is brought to a standstill;

an engine RPM actuated means sensitive to a second predetermined RPM, lower than said first predetermined RPM and higher than the idle RPM of the engine, for varying the pressure in said pressure chambers to create a second compressive force preventing an increase in transmission drive ratio above said second predetermined RPM effectively lowering the shift point of the transmission during deceleration.

4,206,660

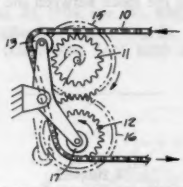
INFINITELY VARIABLE (FROM ZERO UP) TRANSMISSIONS, WITH CONSTANT OR HARMONIC POWER INPUT AND A CHAIN GEAR MULTIACTION CAM

Lawrence G. Brown, 3285 Old 395 N., Carson City, Nev. 89701

Continuation of Ser. No. 438,728, Feb. 1, 1974, abandoned. This application Dec. 13, 1976, Ser. No. 750,125

Int. Cl.[2] **F16H** *35/02*

U.S. Cl. 74—393 **34 Claims**



1. An infinitely variable transmission in which one push/pull rod is pivoted at one end and is connected to a dual rack mated respectively on top and bottom of two oppositely facing override gears, mounted on an output shaft; an oscillating input force applicator which is wedge shaped and has an opening in the top of the wedge being slightly wider than the amplitude of oscillation, permitting when the oscillating force applicator is at the end of the push/pull rod, full oscillation yet zero power transmission.

4,206,661

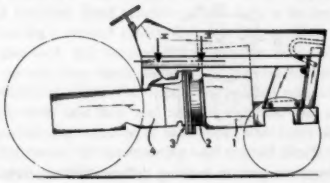
DRIVE MECHANISM FOR A MOTOR VEHICLE

Bernhard Horstmann, Korschenbroich, and Reinhard Wesemeier, Neuss, both of Fed. Rep. of Germany, assignors to International Harvester Company, Chicago, Ill.

Division of Ser. No. 732,625, Oct. 15, 1976, Pat. No. 4,137,794. This application Jun. 5, 1978, Ser. No. 912,595

Int. Cl.[2] **B60K** *17/00;* **F16H** *57/02*

U.S. Cl. 74—606 R **4 Claims**



1. A tractor type of vehicle for use in agricultural and industrial operations comprising: an internal combustion engine; a transmission; a clutch, the clutch having a housing connected to the internal combustion engine and the transmission having a housing connected to the clutch housing, the clutch housing and transmission housing each having radially extending external flanges and the flanges having annular external lips; a plurality of circumferentially spaced pairs of first and second rubber blocks of substantially hexagonal cross section, the first block of each pair positioned between facing sides of the flanges and the second block of each pair positioned on an external side of the clutch housing flange, the facing sides and the external side of the flanges having longitudinally aligned recesses corresponding to the shape of the first and second blocks, the first block nesting in the recesses in the facing sides

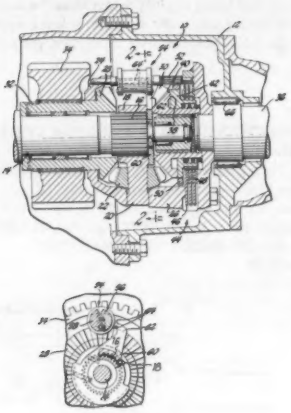
and the second block nesting in the recess in the external side; means for permitting limited angular movement between the transmission and clutch housings comprising an axially telescopic drive shaft connection from the clutch to the transmission within the area of the connection of the transmission housing flange to the clutch housing flange; a pressure plate having a depression complementary with and seated on a non-flange facing side of the second block, the first and second blocks and the pressure plate each having a central axially aligned opening, a tubular bushing carried in the openings of the first and second blocks; a bolt means passing through the opening in the plate and through the tubular bushing for clamping the first and second blocks against the recesses and the depression; and a sealing ring sleeved over the lips of the flanges for sealing the space between the facing sides of the flanges.

4,206,662

LOCKING DIFFERENTIAL FOR A FOUR-WHEEL DRIVE SYSTEM HAVING A COAST-RELEASE MECHANISM

David F. Manz, Bloomfield Hills, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1978, Ser. No. 907,111
Int. Cl.[2] F16H *1/44*
U.S. Cl. 74—710.5 **2 Claims**



1. An improvement in locking differentials wherein a friction clutch drivingly connects one side gear of the differential to the carrier thereof when a predetermined speed differential is present between the side gear and the carrier, a shaft drivingly connects the carrier and normally transmits torque thereto and a speed differential sensitive control having radially movable centrifugally actuated members engageable with a bracket to initiate engagement of the friction clutch, the improvement comprising; lost motion means between the shaft and the carrier for permitting small relative angular movement therebetween when torque is transmitted from the carrier to the shaft, said bracket being drivingly connected to said shaft to be moved angularly out of engaging relation with said radially movable centrifugally actuated members when torque is transmitted from the carrier to the shaft to prevent initiation of clutch engagement if the clutch is not engaged and to initiate disengagement of the clutch if the clutch is engaged.

4,206,663

LINEMAN SNAKE GRIPPER

Joseph Pace, 303 99th St., Brooklyn, N.Y. 11209

Continuation-in-part of Ser. No. 693,745, Jun. 8, 1976, abandoned. This application Nov. 14, 1977, Ser. No. 851,168
Int. Cl.[2] B25B *7/02*
U.S. Cl. 81—311 **2 Claims**

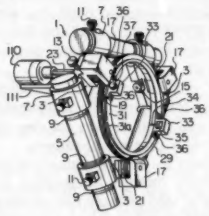
1. A linemans pliers adapted for use as a snake gripper, comprising a pair of pivotably secured crossing levers having spaced outer transverse sides provided with a head having front and rear pairs of coacting opposing jaws with gripping surfaces at the front end of said levers and opposing elongated handles at the rear end, said jaws disposed between said sides including a pivot pin affixed to a first of said levers and pivotably mounted in the second of said levers at a point along the longitudinal axis of said pliers, between the front and rear jaws including an axial longitudinal groove along one of said outer transverse sides wherein the said front and rear gripping surfaces of said jaws align longitudinally with said groove centerline along the longitudinal axis of the pliers when said jaws are closed in the gripping position.

4,206,664

PIPE CUTTING DEVICE

Fumiko Miyagawa, Osaka, Japan, assignor to Rex Industries Co., Ltd., Osaka, Japan

Filed Aug. 16, 1978, Ser. No. 934,275
Int. Cl.[2] B23B *3/22*
U.S. Cl. 82—4 C **8 Claims**



1. A device for cutting a pipe comprising: an adjustable ring frame body comprising a plurality of identical rods relatively movably interconnected by means of connecting members, said rods and their extensions defining a substantially equilateral polygon, having a center opening through which a pipe to

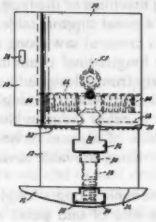
be cut extends, a ring member comprising a ring gear having outer peripheral teeth, said frame body having means for rotatably supporting and guiding said ring gear means engaged with said ring gear and connecting to a drive for rotating said gear means to transmit the rotational movement to said ring gear, said ring member carrying at least one tool holder holding at least one cutting tool radially projecting therefrom, said frame body being provided with a plurality of adjustable clamp means for clamping said pipe.

4,206,665

PRESETTABLE TOOL SUPPORTING DEVICE

Horst Schürfeld; Wolfgang Peters, both of Bielefeld, Fed. Rep. of Germany, and Robert M. Ortlieb, Southfield, Mich., assignors to DeVlieg Machine Company, Royal Oak, Mich.

Filed Oct. 15, 1976, Ser. No. 732,936
Int. Cl.[2] B23B *29/00*
U.S. Cl. 82—36 R **25 Claims**



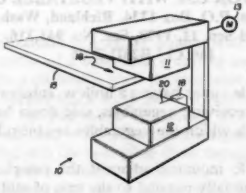
1. A tool supporting device for machine tools, comprising: a tool holder having means for affixing a tool thereto; a base member having attaching means for attaching said base member to a machine tool; a retaining element connected to said base member, said retaining element having opposed longitudinally extending surfaces thereon; a pair of gripping elements on said tool holder and arranged to straddle said retaining element and clampingly engage said opposed surfaces; and actuating means for forcing said gripping elements against said opposed surfaces to lock said tool holder to said base member, said actuating means including an actuating screw one end of which threadably engages one of said gripping elements with threads of one hand and the other end of which threadably engages the other of said gripping elements with threads of the opposite hand.

4,206,666

PRESS CONTROL SYSTEM

Bruce F. Ashton, Windsor, Canada, assignor to James Joseph Morrison Management Ltd., Windsor, Canada

Filed Nov. 16, 1978, Ser. No. 961,301
Int. Cl.[2] B26D *7/24*
U.S. Cl. 83—63 **10 Claims**



1. In a continuous machine press system having a motor driven press with a reciprocal ram wherein material to be stamped or punched is fed into the die area beneath the ram, the improvement of a control circuit comprising:

first switch means to detect the presence and absence of said material in the die area;

timing means responsive to said first switch means to provide a signal when material is absent from said die area for a predetermined time interval less than the time for the ram to travel from an extreme position to the die area; and

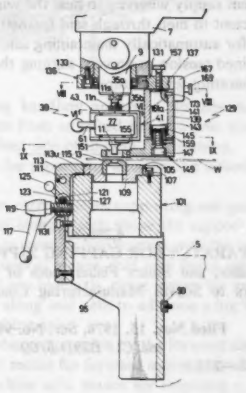
second switch means actuated by said timing means to stop said ram in response to said signal from said timing means.

4,206,667

TOOL HOLDING APPARATUS FOR PRESSES

Tadashi Hirata, Yamato, and Takashi Nakano, Sagamihara, both of Japan, assignors to Amada Company, Limited, Isehara, Japan

Filed Aug. 31, 1978, Ser. No. 938,594
Claims priority, application Japan, Aug. 31, 1977, 52-103534
Int. Cl.[2] B26D *7/06, 7/26;* B26F *1/02*
U.S. Cl. 83—146 **9 Claims**



1. For use with a press having an upper tool which is vertically reciprocated by means of a ram and which is arranged to cooperate with a stationary lower tool in performing work on a workpiece positioned therebetween, apparatus for detachably mounting the upper tool on the ram, comprising: a first cavity on the ram for receiving a portion of the upper tool, a first block member fixed relative to the ram, a second block member having a second cavity for receiving another portion of the upper tool, said second block member being pivotally mounted on said first block member for movement between a closed position at which the upper tool is fixed relative to the ram within both said first and second cavities, and an open position permitting removal of said upper tool from said ram, and locking means for maintaining said second block member in said closed position.

4,206,668

CUTTING AND SIZING DEVICE FOR FOAMED MATERIAL

Cecil K. Creech, P.O. Box 12, Shadyside, Md. 20867

Filed Aug. 9, 1978, Ser. No. 932,191
Int. Cl.[2] B26D *7/10;* B29C *17/10*
U.S. Cl. 83—171 **9 Claims**

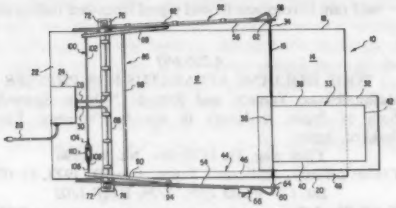
1. Apparatus for sizing a block of foamed synthetic resinous material having a laminate adhered thereto, which comprises in combination:

a table providing a horizontal supporting surface and having a transverse groove disposed between opposite ends of such surface;

a pair of arms, one disposed along each of the opposite side edges of said supporting surface and means pivotally

connecting one end of each arm to said table whereby the free ends of said arms are free to move in a vertical plane;

an electrical resistance wire extending between said free ends of the arms and positioned to pass into said groove as the free ends of said arms are moved downwardly;



means for selectively connecting said wire to a low voltage current supply whereby to heat the wire to a temperature sufficient to melt through said foamed material; and

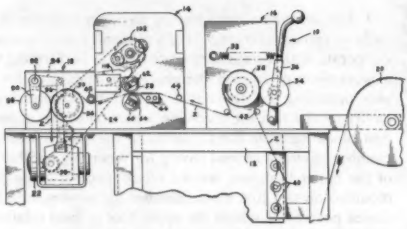
means for automatically maintaining said wire under predetermined tension to prevent sagging thereof when heated to operating temperature.

4,206,669

APPARATUS FOR GAPPING ZIPPER CHAIN

Harry Fisher, and Stuart Fisher, both of Whitestone, N.Y., assignors to Scovill Manufacturing Company, Waterbury, Conn.

Filed Nov. 15, 1978, Ser. No. 960,942
Int. Cl.[2] B29D 5/00
U.S. Cl. 83—212.1 **4 Claims**



1. An apparatus for making a gap in a zipper chain having lines of fastener elements each comprising a U-shaped element joined by connector threads embedded therein, the apparatus comprising:

(a) a housing;

(b) a pair of opposed aligned heads rotatably supported on spaced parallel axes in the housing, the heads each mounting slitters extending outward from the axis of the head, the heads being adapted to assume a working position wherein the slitters face each other, the slitters being aligned with and engaging the fastener elements of the chain when the slitters are in the working position;

(c) means to rotate the heads in opposite senses of rotation and hold the heads from rotating when the slitters are in the working position;

(d) means to guide the chain between the heads so that their fastener elements are in line with the slitters;

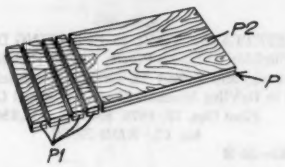
(e) means to draw the chain between the slitters to thereby slit and demolish the elements.

4,206,670

DEVICE FOR THE LONGITUDINAL SHORTENING OF PANELS IN PANEL CUTTING MACHINES

Gino Benuzzi, Bologna, Italy, assignor to Giben Impianti S.p.A., Bologna

Filed Sep. 19, 1977, Ser. No. 834,354
Claims priority, application Italy, Sep. 20, 1976, 12798 A/76
Int. Cl.[2] B27B 5/18, 9/04
U.S. Cl. 83—404.2 **2 Claims**



1. In a panel cutting machine, of the type in which panels are longitudinally fed on a panel support table, to be subjected to transverse cutting by a crosscut saw along a transverse cutting line, a device for the longitudinal trimming of the panels by cutting at least one strip from a longitudinal side thereof prior to transverse cutting thereof, said trimming device comprising:

(a) a side reference member for providing an abutment for the longitudinal side of a panel to be trimmed, said side reference member being movable toward and away from said panel;

(b) a circular saw movable along a longitudinal cutting line located along the side of said panel to be trimmed and having its axis of rotation above said panel to be trimmed, said side reference member being arranged for movement toward and away from the longitudinal cutting line of said circular saw;

(c) a side pusher, arranged at the side of said panel opposite to the side to be trimmed, said side pusher being movable transversely to the longitudinal direction of feeding of said panel;

(d) an elevating table for intermittently elevating a pile of panels loaded thereon in predetermined amounts so as to bring to the same level of the panel support table a predetermined number of panels;

(e) a longitudinal pusher for pushing said predetermined number of panels from said pile onto said panel support table;

(f) a transverse abutment for the transverse alignment of said predetermined number of panels engaged by said longitudinal pusher, arranged between said elevating table and said panel support table, and being movable in and out of the way of said panel being processed;

(g) said side abutment member and said side pusher being arranged along the longitudinal sides of said elevating table.

4,206,671

IMPELLER FOR USE WITH VEGETABLE CUTTER

Vaughn E. Hoehn, P.O. Box 1334, Richland, Wash. 99352

Filed Sep. 11, 1978, Ser. No. 941,316
Int. Cl.[2] B26D 7/06
U.S. Cl. 83—408 **19 Claims**

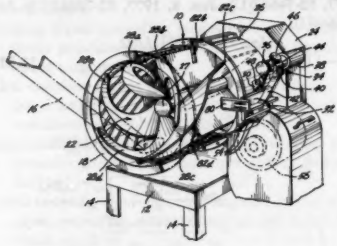
1. In a vegetable cutter having a hollow, substantially cylindrical drum for receiving vegetables, said drum having a forward end through which the vegetables are introduced and a rear end,

a slabbing knife mounted adjacent the periphery of said drum, substantially parallel to the axis of said drum, said knife extending into the interior of said drum and terminating in a cutting edge, and

a plurality of impeller blades radially oriented with respect to said drum mounted within said drum for movement of the blades such that the blades sweep the interior surface

of the drum so as to urge the vegetables against the cutting edge of the knife, the improvement wherein:

each of said impeller blades includes a first substantially rectangular portion adjacent said rear end of said drum, a second curved portion extending from said rectangular portion toward said forward end of said drum and as it extends toward the forward end of said drum, curving in the direction of movement of said impeller blades, and a third finger portion, said finger portion extending from



the forward end of said second portion toward said forward end of said drum and also curving in the direction of movement of said impeller blades, the width of said finger portion in a direction radially oriented relative to the interior surface of said drum decreasing as it extends toward the forward end of said drum, said finger portion terminating adjacent the forward end of said drum, each of said blades having an outer edge that is substantially equidistant from the interior surface of said drum at each point along said outer edge.

4,206,672

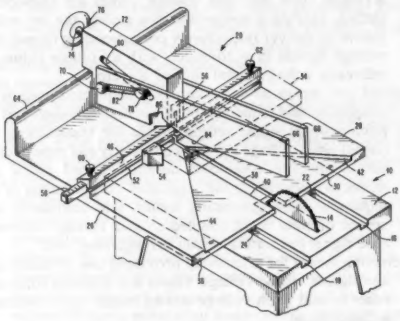
CUTTING TOOL JIG WITH CUTTER GUARD

Willis A. Smith, 112 Sarles La., Pleasantville, N.Y. 10570

Filed Aug. 16, 1978, Ser. No. 934,165

Int. Cl.[2] B27B *25/08, 27/06*

U.S. Cl. 83—415 **20 Claims**



1. In combination in a jig for holding and feeding work to the rotary cutter of a table rotary cutting tool having a base plate slidably positionable upon the tool table and an upper flat surface for supporting a work piece which is to be cut and a substantially vertical work advancing abutment extending upwardly from said work supporting surface with a through-slot extending into the base plate from the edge thereof opposite to said work advancing abutment,

a combination guard and work clamping means comprising two parallel plates pivotally attached to said jig and operable to be swung downwardly on opposite sides of said through-slot so that said two plates straddle said through-slot to clamp a work piece which is to be cut under the bottom edge of at least one of said two plates to thereby hold the work piece securely against said base plate and to substantially enclose the rotary cutter as the work is advanced into the cutter by forward movement of said jig.

4,206,673

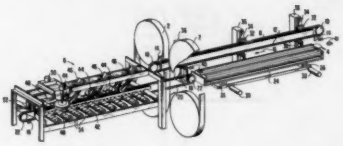
LOG HANDLING METHOD AND APPARATUS

Robert K. Detjen, Eau Claire, Wis., assignor to McDonough Manufacturing Company, Eau Claire, Wis.

Division of Ser. No. 772,152, Feb. 25, 1977, Pat. No. 4,146,076, which is a continuation-in-part of Ser. No. 556,836, Mar. 10, 1975, Pat. No. 4,009,632. This application Oct. 31, 1978, Ser. No. 956,519

Int. Cl.[2] B27B *15/04, 29/08*

U.S. Cl. 83—731 **16 Claims**



1. A sawmill log handling apparatus for advancing logs along a machine axis from an infeed side of a saw, through the saw and to an outfeed side of the saw, comprising,

a support means for supporting a log on the infeed side of a saw,

a pusher member, carrier means supporting and guiding said pusher member along a path above the support means to bring the pusher member into contact with the rear end of a log on the support means, said path being substantially parallel to the machine axis, drive means for moving the carrier means along said path to advance a log forwardly along the machine axis,

a holdback member, engageable by the forward end of a log on the support means for forward movement with the log along the machine axis, means for imposing a rearward force on the holdback member during its forward movement to clamp a log between the pusher member and the holdback member,

means for moving a log on said support means laterally of the machine axis to displaced positions, and said carrier means for the pusher member being spaced from said displaced positions so as not to interfere with movement of a log to said displaced positions.

4,206,674

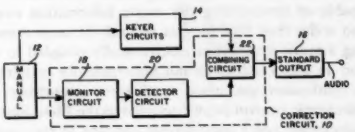
DC OFFSET CORRECTION CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

Brian M. Bagus, Bartlett, and Ray B. Schrecongost, Park Ridge, both of Ill., assignors to Marmon Company, Chicago, Ill.

Filed Jun. 22, 1978, Ser. No. 917,878

Int. Cl.[2] G10H *1/00*

U.S. Cl. 84—1.01 **7 Claims**



1. A DC offset correction circuit in combination with an electronic organ having a keyboard, a keyer circuit, at least one keying line connecting said keyboard to said keyer circuit, said keyer circuit providing an output signal waveform at a frequency representative of a key activated, said output signal

having instantaneous DC level shifts, and an audio output circuit, said DC offset correction circuit comprising:

a monitoring means connected to said keyboard and responsive to the actuation of each key for providing an output signal indicating that a key is being actuated regardless of the number of keys previously actuated;

a detector means responsive to said output signal from said monitoring means for providing a DC voltage level output signal for each key actuation; and,

a combining circuit responsive to said output signal waveform from said keyer circuit and said DC output signal from said detector means for offsetting said instantaneous DC level shift in said keyer output signal and providing an output signal with no net DC level shift to said audio output circuit.

4,206,675

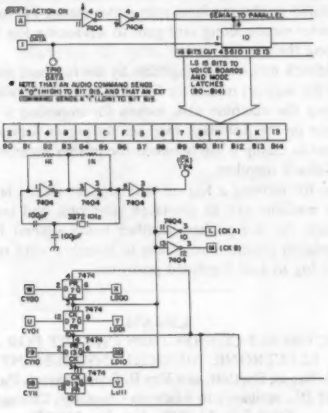
CYBERNETIC MUSIC SYSTEM

Sherwin J. Gooch, 813 Fairview, Urbana, Ill. 61801

Filed Feb. 28, 1977, Ser. No. 773,078

Int. Cl.[2] G10F *1/00*

U.S. Cl. 84—1.03 **2 Claims**



1. In a Plato System comprising a central computer and a user terminal, said system containing music information and being capable of transmitting the music information over a channel no wider than 1260 bits per second, the improvement comprising a music synthesizer electronically coupled to said system and an audio output circuit electronically coupled to the music synthesizer, said music synthesizer comprising:

(a) an electronic control circuit coupled to the Plato System;

(b) an electronic voice logic circuit coupled to the control circuit; and

(c) an electronic output circuit coupled to the voice logic circuit and to the audio output circuit, said output circuit providing volume control of the audio output circuit;

said improvement in combination with said Plato System capable of reproducing the music information aurally in a plurality of voices.

4,206,676

ELECTRONIC MUSICAL INSTRUMENT WITH SEQUENCER FOR AUTOMATIC ARPEGGIO PERFORMANCE

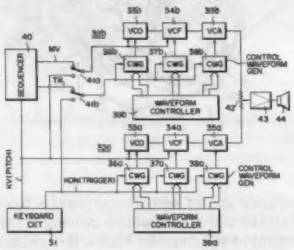
Takeshi Adachi; Masahiko Koike, and Haruyuki Suzuki, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jun. 1, 1978, Ser. No. 911,396

Claims priority, application Japan, Jun. 3, 1977, 52-65530; Jun. 8, 1977, 52-74642[U]; Jun. 8, 1977, 52-74643[U]; Jun. 8, 1977, 52-74644[U]

Int. Cl.[2] G10H *1/02*

U.S. Cl. 84—1.03 **22 Claims**



1. An electronic musical instrument comprising:

a voltage-controlled tone signal generating circuit arrangement for generating a tone signal having a tone pitch which is determined by a voltage value of a signal applied thereto as its control signal;

clock pulse generating means for generating clock pulses;

sequential pulse generating means coupled to said clock pulse generating means for generating sequentially and circulatingly output pulses on outputs thereof;

pitch voltage signal setting means for setting a plurality of pitch voltage signals respectively having voltage values defining pitches of notes in a musical scale when supplied to said voltage-controlled tone signal generating circuit arrangement, said pitch voltage signal setting means being arranged such that said voltage values are respectively shifted, keeping a proportionality among the set voltage values, to deliver respectively corresponding output pitch voltage signals in accordance with a voltage value of a reference voltage signal applied thereto;

plural gate means having commonly connected outputs and coupled to said sequential pulse generating means and said pitch voltage signal setting means for transmitting said output pitch voltage signals sequentially and repeatedly to said commonly connected outputs of said plural gate means in response to the sequential output pulses of said sequential pulse generating means, said commonly connected outputs being coupled to said voltage controlled tone signal generating circuit arrangement; and

selecting means for selectively providing one of plural voltage signals whose voltage values are different from each other to said pitch voltage setting means as the reference voltage signal.

12. An electronic musical instrument comprising:

sequential pulse generating means for generating sequentially and circulatingly output pulses on outputs thereof;

plural gate means each having an input, output and control input, and arranged to be sequentially and circulatingly enabled by the sequential output pulses of said sequential pulse generating means respectively applied to said control inputs, said outputs of said plural gate means being connected commonly together;

a voltage-controlled tone signal generating circuit arrangement coupled to said commonly connected outputs of said plural gate means for producing a tone signal having a frequency corresponding to the magnitude of an output voltage signal on said commonly connected outputs of said plural gate means;

plural potentiometers each having a resistance body with first and second ends and a slider, the sliders of said plural potentiometers being coupled to said control inputs of said plural gate means, respectively, and said resistance bodies of said plural potentiometers being connected in parallel with each other with first ends of said parallel connected resistance bodies connected to a reference potential source;

an operational amplifier having an output and first and second inputs;

voltage signal providing means having an output for selectively providing one of plural voltage signals having different magnitudes;

first coupling means for coupling said output of said operational amplifier to second ends of said parallel connected resistance bodies of said potentiometers;

second coupling means for coupling the slider of one of said potentiometers to said first input of said operational amplifier; and

third coupling means for coupling said output of said voltage signal providing means to said second input of said operational amplifier.

18. An electronic musical instrument comprising:

clock pulse generating means for generating clock pulses;

sequential pulse generating means responsive to application of input pulses thereto to produce output pulses on outputs thereof sequentially and circulatingly;

plural gate means each having an input, output and control input, and arranged to be sequentially and circulatingly enabled by the sequential output pulses of said sequential pulse generating means respectively applied to said control inputs, said outputs of said plural gate means being connected commonly together;

a voltage-controlled tone signal generating means coupled to said commonly connected outputs of said plural gate means and generating a tone signal having a tone pitch which is determined by a voltage value of a signal applied thereto as its control signal;

pitch voltage signal setting means for setting a plurality of pitch voltage signals respectively having voltage values defining pitches of notes in a musical scale when supplied to said voltage-controlled tone signal generating circuit arrangement, said pitch signals being coupled to said inputs of said plural gate means, respectively;

an auto/manual mode selection switch;

an operation control switch;

control circuit means coupled to said auto/manual mode selection switch, said operation control switch and said clock pulse generating means, and responsive to the auto mode selection by said auto/manual mode selection switch and a subsequent operation of said operation control switch to couple the clock pulses of said clock pulse generating means as input pulses to said sequential pulse generating means, and responsive to the manual mode selection by said auto/manual mode selection switch and subsequent repetitive operations of said operation control switch to couple an advance pulse as an input pulse to said sequential pulse generating means every time said operation control switch is operated.

21. An electronic musical instrument comprising:

a keyboard circuit having a plural keys for providing a pitch determining voltage signal having a magnitude corresponding to the note of a depressed key;

a first voltage-controlled tone signal generating circuit arrangement connected to receive the pitch determining voltage signal from said keyboard circuit for producing a tone signal having a tone pitch corresponding to the depressed key;

sequencer means for providing sequentially and repeatedly a plurality of pitch voltage signals on an output thereof, said sequencer means being connected to receive the pitch determining voltage signal from said keyboard circuit and arranged such that the magnitudes of the pitch voltage signals on said output are a function of the pitch determining voltage signal from said keyboard circuit; and

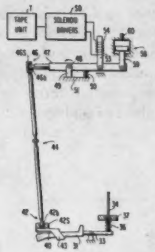
a second voltage-controlled tone signal generating circuit arrangement selectively connectable to said keyboard circuit and to said sequencer means.

4,206,677

PEDAL ACTUATOR FOR ELECTRONIC PLAYER PIANO

Vernon B. Ramsey, Lewisburg, Tenn., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jul. 17, 1978, Ser. No. 925,653
Int. Cl.[2] G10F *3/00, 5/00*
U.S. Cl. 84—107 **10 Claims**



1. A foot member for engagement with a foot pedal of a musical instrument comprising,

an upper pedal surface engaging member,

a lower pedal surface engaging member,

means interconnecting said upper and lower pedal engaging members such that the upper pedal engaging member engages an outer upper surface portion of said foot pedal and said lower pedal engaging member engages an inner lower surface of said foot pedal, and

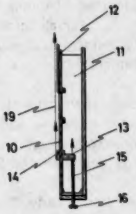
force receiving means on said foot member, including a universal joint, for causing said lower pedal surface engaging member to engage said lower pedal surface upon said upper pedal surface engaging member engaging said outer upper surface of said foot pedal.

4,206,678

INTRODUCED IN THE MECHANICAL AND FUNCTIONAL STRUCTURE OF STRINGED INSTRUMENTS

Antonio Espinos Guerrero, Po de la Habana, 204 Madrid, Spain

Filed May 30, 1978, Ser. No. 910,949
Claims priority, application Spain, Nov. 29, 1977, 464.582; Dec. 27, 1977, 465.484
Int. Cl.[2] G10D *3/00*
U.S. Cl. 84—267 **3 Claims**



1. In a stringed instrument such a guitar or the like having a sound box including an upper cover, a bridge fastened to an outer surface of said upper cover and supporting strings, and

means for adjusting the tension of said strings by imparting thereto tension forces in a direction longitudinally thereof, with the result that such tension forces on said strings generate a force on said bridge tending to deform said upper cover, the improvement of means for counteracting said force and eliminating such deformation, said counteracting and eliminating means comprising:

an auxiliary bridge fixed to an inner surface of said upper cover at a position aligned with said bridge fixed to said outer surface thereof;

means for imparting to said auxiliary bridge an auxiliary tension force parallel to and in the same direction as said tension force on said strings; and

the product of said auxiliary tension force and the distance from said upper cover to the position at which said auxiliary tension force acts on said auxiliary bridge equaling the product of said tension forces on said strings and the height of said bridge from said strings to said upper cover, such that the resultant of said tension forces on said strings and said auxiliary tension force on said auxiliary bridge acts along the plane of said upper cover parallel to and in the same direction as said tension forces and said auxiliary tension force.

4,206,679

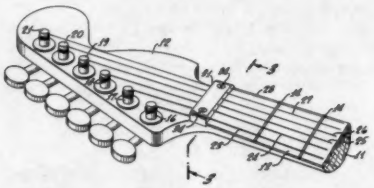
ELECTRIC SPANISH GUITAR, AND NUT INCORPORATED THEREIN

Gregg Wilson, Irvine, Calif., assignor to CBS Inc., New York, N.Y.

Continuation-in-part of Ser. No. 895,460, Apr. 11, 1978, abandoned. This application Jan. 25, 1979, Ser. No. 6,795

Int. Cl.² G10D *3/04*

U.S. Cl. 84—314 N **17 Claims**



1. An electric Spanish-style guitar, which comprises:

(a) a guitar body,

(b) an elongated neck extending from said body and having a head at the outer end thereof,

(c) a plurality of guitar strings anchored to said body and extending over a bridge on said body and thence along said neck to adjustable tuning means on said head,

said strings being formed of metal and being maintained under tension by said tuning means,

said strings lying generally in a plane spaced above and parallel to the fingerboard on said neck,

(d) a nut,

said nut having a body through which said strings extend,

said nut incorporating means to effect two bends in each string as it extends from a region over the outer fingerboard end to a region over the inner portion of said head, and

(e) means to mount said nut firmly, fixedly and nonslidably at the junction of said fingerboard and said head,

said bends, said last-named means and said nut body being adapted to increase the dwells of said strings, in comparison to the dwells which would occur if the same guitar had a conventional nut.

4,206,680

KEYING IMPROVEMENT FOR CLARINETS

Shelley J. Hanson, 3762 N. Cedar St., Apt. 127, Fresno, Calif. 93726, and Charles L. Bay, 1285 Brookview Ave., Westlake Village, Calif. 91361

Filed Sep. 8, 1978, Ser. No. 940,776

Int. Cl.² G10D *7/06*

U.S. Cl. 84—382 **7 Claims**

1. For use on a clarinet, having fingerholes that are selectively uncovered to produce corresponding musical notes, and also having a side Bb hole and a corresponding conventional side Bb key normally operated by the first finger of the right hand, after removal of the finger from its basic finger-hole position, the improvement comprising:

means for extending the length of said side Bb key to a position adjacent to the finger-hole for the first finger of the right hand, whereby said key may be actuated by said first finger without relocating the finger from its basic finger-hole position.

4,206,681

PERCUSSION INSTRUMENT

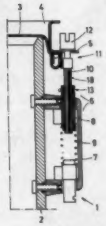
Roman Kluczynski, and Herbert Miss, both of Bad Berlenburg, Fed. Rep. of Germany, assignors to Fa. Johs. Link KG, Bad Berleburg, Fed. Rep. of Germany

Filed Mar. 27, 1979, Ser. No. 24,315

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2813883

Int. Cl.² G10D *13/02*

U.S. Cl. 84—411 R **8 Claims**



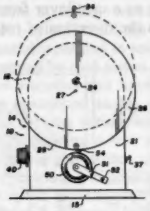
1. Percussion instrument including a tensioning mechanism for the head, comprising threaded bushings held in bearing blocks disposed on the circumference of the instrument wall and screws which are adjustable therein which also act on a hoop which holds the head, each threaded bushing being formed on its circumference with at least one tangential slot in which a peripheral section of a spring ring engages with pretension, and each screw having on its shank at least one peripheral indentation as a catch surface for the peripheral section of the spring ring which lies in the slot of the threaded bushing.

4,206,682

MUSICAL RHYTHM INDUCTOR

Adrien J. Boisvert, 840 Duthie Ave., Burnaby, British Columbia, Canada V5A 2PS

Continuation of Ser. No. 855,660, Nov. 30, 1977, abandoned.
This application Jan. 15, 1979, Ser. No. 3,446
Int. Cl.[2] G04F *5/00, 5/02*
U.S. Cl. 84—484 4 Claims



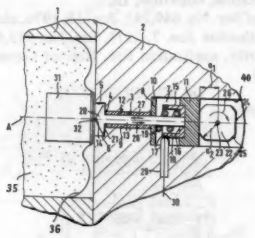
1. A musical rhythm inductor comprising a rotatably mounted shaft, a circular disc eccentrically mounted on the shaft to rotate therewith, said circular disc having diametrically opposed peripheral edge portions spaced maximum and minimum distances from an axis of rotation of the shaft, and drive means for rotating the shaft at a constant speed whereby movement of the peripheral edge portions on the rotating circular disc provides a rythmic and visual indication of tempo.

4,206,683

ELECTRICAL FIRING SYSTEM FOR WEAPONS

Wolfgang Ringelhan, Duesseldorf, Fed. Rep. of Germany, assignor to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,659
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743770
Int. Cl.[2] F41D *11/16*
U.S. Cl. 89—28 A 3 Claims



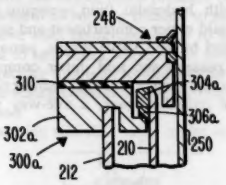
1. An electric firing system adapted for weapons firing ammunition with combustible casing or without a propellent charge casing, such system comprising an electrically conducting contact pin having an insulator body and an igniter point which is arranged in a bore of a breech-block to be axially movable from a rest position to a firing position and back again into the rest position and which is connectable with a voltage source, the contact pin in its rest position being in electrically conducting contact with the mass of the breech block, means to move the contact pin into the operating position against a restoring force and to release it into the rest position on its return, and a cover member, the cover member sealing one end of the bore in the breech block when the contact pin is in its rest position.

4,206,684

HYDRAULIC JACK

John G. Gosney, 3306 Mud Lick Rd., SW., Roanoke, Va. 24108, and James A. Gosney, 2000 McVitty Rd., Salem, Va. 24153

Division of Ser. No. 740,203, Nov. 9, 1976, abandoned, which is a continuation-in-part of Ser. No. 607,381, Aug. 19, 1975, abandoned. This application Mar. 16, 1978, Ser. No. 887,275
Int. Cl.[2] F01B *7/20*
U.S. Cl. 91—173 29 Claims



1. A telescoping hydraulic jack comprising:
(a) an elongated plunger member having a closed sidewall;
(b) an elongated sleeve member telescopingly enclosing said plunger member and including:
(1) a sleeve head slidingly but sealingly engaging said plunger member sidewall;
(2) a sleeve sidewall having a first end, closed by means including said sleeve head, and a second end and having at least one fluid port therethrough adjacent said sleeve sidewall second end; and
(3) a sleeve closure member attached to said sleeve sidewall to close the second end thereof;
(c) an elongated cylinder member telescopingly enclosing said sleeve member and including a cylinder head slidingly but sealingly engaging said sleeve sidewall, and a cylinder sidewall having a first end, closed by means including said cylinder head, and a second end;
(d) means slidingly sealing said sleeve sidewall to said cylinder sidewall between said sleeve sidewall fluid port and said sleeve sidewall second end;
(e) a jacket member encircling said cylinder sidewall and including:
(1) a closed jacket sidewall having a first end and a second end;
(2) a jacket head having a first portion attached to said jacket sidewall adjacent the first end thereof, a second portion attached to said cylinder sidewall, and a seal portion cooperating with said jacket head first and second portions to sealingly couple said jacket member and said cylinder member while permitting limited angular movement therebetween and inhibiting longitudinal movement therebetween in at least one longitudinal direction; and
(3) a jacket closure portion attached to said jacket sidewall to close the second end thereof; and
(f) means for supplying hydraulic fluid to and withdrawing hydraulic fluid from the interior of said jacket member.

4,206,685

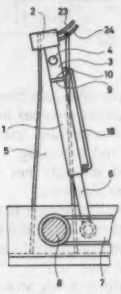
HYDRAULIC TURNING DEVICE FOR A TURN PLOW

Gerhard Pusch, Hausach, Fed. Rep. of Germany, assignor to Erwin Hengstler Fabrik Hydraulischer Hebezeuge, Hausach, Fed. Rep. of Germany

Filed Jan. 17, 1977, Ser. No. 759,855
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1976, 2601636; Jan. 17, 1976, 7601189[U]
Int. Cl.[2] F01L *25/02;* F15B *11/15*
U.S. Cl. 91—356 16 Claims

1. A hydraulic turning device for a turn plow connectable to a tractor, comprising substantially upright double-acting hydraulic cylinder-and-piston means including a piston axially

reciprocable in the cylinder of said cylinder-and-piston means and dividing the cylinder into an upper and a lower compartment, said piston adapted to be operably connected to a turn plow for turning the latter in two steps between a first and a second through 180° reversed position; and a control device having an inlet passage for a hydraulic medium under pressure and a return passage for the medium and including valve means comprising a cylinder space communicating with the inlet passage, and a valve spool having opposed pressure responsive differential areas reciprocable in said cylinder space for controlling conduit means filling both said upper and said lower compartments with hydraulic fluid, pressure valve means located between said upper compartment and said return passage and controlled by said valve means, passage means between said inlet passage and said upper compartment, said passage means comprising a channel connecting said inlet passage with said cylinder space, a one-way valve in said



passage means permitting flow of pressure medium from said inlet passage to said upper compartment while preventing such flow in the opposite direction, reversing piston means located in said passage means movable between two positions for controlling filling of said upper compartment with the pressure mdium, pressure responsive reversing valve means movable between an open and a closed position, biasing means tending to maintain said reversing valve means with a predetermined pressure in said closed position, said reversing valve means being arranged for determining movement of said reversing piston between the positions thereof depending on the pressure acting thereon from said channel, and pressure control means in said channel upstream of said valve spool for maintaining the pressure acting on said reversing valve means during the first step of the turning operation below said predetermined pressure to keep said reversing valve means closed while increasing the pressure when the piston reaches its upper dead center position to open said reversing valve means.

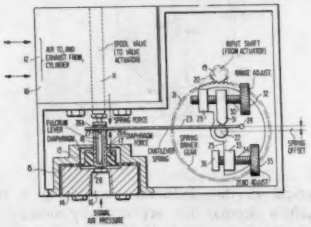
4,206,686

CANTILEVER BEAM POSITIONER FOR VALVE ACTUATORS

Ricardo Gonzalez, Holden; Charles A. Sumner, E. Princeton, both of Mass., and Robert E. Sanctuary, Amherst, N.H., assignors to Worcester Controls Corporation, West Boylston, Mass.

Filed Dec. 4, 1978, Ser. No. 966,300
Int. Cl.[2] F15B *13/16*
U.S. Cl. 91—386 **12 Claims**

1. In a valve positioner of the type employing a pneumatic valve actuator having a rotatable output shaft for effecting rotary positioning of a valve, an elongated axially displaceable spool valve located between said pneumatic valve actuator and a supply of pneumatic pressure for controlling the rotary movement of said actuator output shaft, transducer means coupled to said spool valve and responsive to a control signal for effecting axial displacement of said spool valve away from a predetermined neutral position when it is desired to effect rotation of said output shaft, and a feedback mechanism responsive to the rotary movement of said rotatable output shaft for generating a force in opposition to the force generated in said transducer means by said control signal for returning said slide valve to its said neutral position when said output shaft has rotated to a desired position, the improvement wherein said feedback mechanism comprises a rotatable element adapted to be coupled to said output shaft of said pneumatic valve actuator for rotation with rotation of said shaft, an elongated spring beam attached at one end thereof to said rotatable element and extending as a cantilever from said element in a direction transverse to the direction of rotation of said rotat-



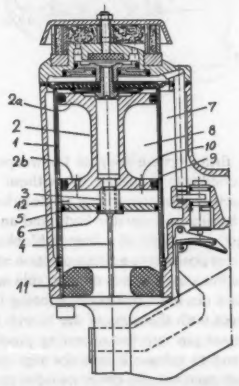
able element, and means coupling the other end of said cantilever spring beam to said transducer means for producing a spring force in opposition to the force produced by said transducer means, rotation of said valve actuator output shaft being operative to cause said cantilever spring beam to flex in its direction of elongation as said rotatable element rotates thereby to vary the spring force which is applied by said cantilever spring beam to said transducer means until the spring force produced by said cantilever spring beam balances the control signal responsive transducer force which is being applied to said spool valve.

4,206,687

CUSHIONING DEVICE FOR A PISTON OF A PNEUMATICALLY OPERABLE DRIVING TOOL

Arthur Klaus, Bad Homburg von der Hohe, and Horst Tacke, Bad Vilbel, both of Fed. Rep. of Germany, assignors to Signode Corporation, Glenview, Ill.

Continuation of Ser. No. 649,242, Jan. 15, 1976, abandoned. This application Jun. 7, 1978, Ser. No. 913,492
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1975, 2504094
Int. Cl.[2] F15B *15/22*
U.S. Cl. 91—395 **4 Claims**



1. A cushioning means for the impact piston assembly mov-

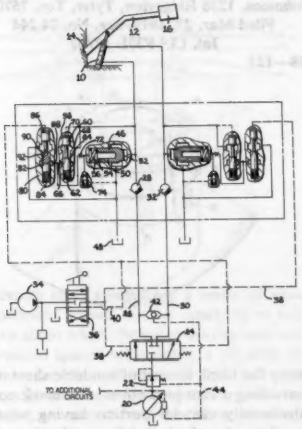
able between a driving and driven position of a pneumatically operable driving tool disposed within a cylinder and having a driver blade assembly connected thereto, comprising first means defining an annular chamber including an apertured bottom plate assembly closing off the end of the cylinder through which the driver blade assembly extends surrounding said driver blade assembly and including port means positioned to be connected to a pressure medium storage chamber for cushioning the force of said piston assembly, said first means including a bumper located at the bottom of the cylinder and an axially displaceable boundary wall in sealing and sliding engagement with said cylinder and the driver blade assembly and disposed substantially parallel to said piston, the boundary wall being axially moved by said piston assembly prior to final impact of the piston assembly and having located thereabove an annular bumper positioned to be engaged by the piston assembly during the driving action, said boundary wall also having a central bore defining a seat surrounding the driver blade assembly and an annular section closing off ports defined in the cylinder wall positioned to be connected to the pressure medium storage chamber and the bottom plate assembly having a central boss portion designed to close off said bore upon engagement with said seat, and means for venting the space below the piston assembly after it has been returned to its driving position, the boundary wall being moved by the piston assembly upon engagement of the piston assembly with said bumper to reduce the volume of the annular chamber to cushion the impact of the piston assembly and reduce the impact noise, the central bore in the boundary wall being closed off, the ports in the cylinder wall being opened to permit the piston assembly to be returned to its driving position and thereafter the chamber below the piston assembly being vented to condition the piston assembly for a subsequent driving action.

4,206,688

OVERRUNNING LOAD CONTROL FOR HYDRAULIC MOTORS

Willard J. Haak, Peoria; Howard A. Marsden, Pekin, and Paul C. Moots, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jun. 9, 1978, Ser. No. 914,117
Int. Cl.[2] F15B *11/08, 13/042*
U.S. Cl. 91—452 **10 Claims**



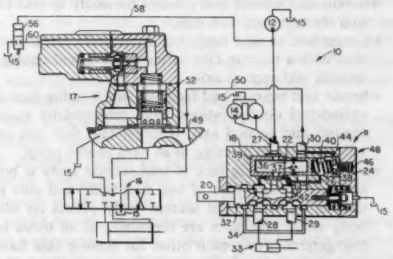
1. In a hydraulic system, the combination of:
a hydraulic motor having a port adapted to be connected to a reservoir, said motor being adapted for connection to a work performing means;
a hydraulic fluid reservoir;
means, including a check valve for connecting said port to said reservoir, said check valve normally preventing fluid flow from said port to said reservoir and including two hydraulically opposed, differential surfaces, one of said surfaces being smaller than the other of said surfaces and being disposed to be responsive to pressure at said port;
a pilot operated, first metering valve having an inlet and an outlet;
means for normally closing said first metering valve;
a second metering valve having an inlet, an outlet, a shiftable metering element interposed therebetween, means biasing said element towards a position minimizing flow between the inlet and the outlet, and a pressure responsive surface on said element in bucking relation to said biasing means;
said first valve inlet being connected to said second valve outlet and to said check valve other surface;
means connecting said port to said second valve inlet;
means for directing pressure at said port to said second valve surface; and
means connecting said first valve outlet to said reservoir.

4,206,689

PRIORITY SYSTEM

Wayne A. Peterson, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 22, 1977, Ser. No. 826,575
Int. Cl.[2] F15B *11/20, 13/07*
U.S. Cl. 91—516 **9 Claims**



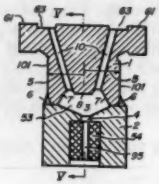
1. In a priority system for series type hydraulic circuits having a source of fluid, a fluid jack, a first control valve connected to the source of fluid and to the fluid jack, a pressure responsive work element means, a second control valve serially connected to an outlet of the first valve and to the work element means, a valve spool within the first valve and movable between a first position at which the source of fluid is in communication with one end of the fluid jack and the other end of the fluid jack is in communication with the outlet of the first valve, and a second position at which the source of fluid is blocked from the fluid jack, a dump spool in the first valve and movable between a first position at which the source of fluid is blocked from fluid communication with the outlet and a second position at which the source of fluid is in communication with the outlet, a chamber in the first valve at one end of the dump spool, passage means connecting the source of fluid to the chamber at the first position of the valve spool to bias said dump spool toward said first position, the improvement comprising:
first means for relieving the fluid pressure in the chamber in response to the pressure in the chamber exceeding a preselected pressure;
second means connecting the outlet of the first valve with said fluid pressure relieving means for increasing the preselected pressure at which the fluid pressure in the chamber is relieved proportional to the fluid pressure in the outlet; and
third means connected to the source of fluid and to the outlet for relieving fluid pressure in the outlet in response to the fluid pressure of the source of fluid exceeding a second preselected pressure.

4,206,690

PIVOT PORTION OF A PISTON SHOE IN RADIAL PISTOL DEVICES

Karl Eickmann, 2420 Isshiki, Hayama-machi, Kanagawa-ken, Japan

Filed Jun. 1, 1977, Ser. No. 802,231
Int. Cl.[2] F16C 9/04, 11/04; F16J 1/14
U.S. Cl. 92—187 10 Claims



1. A hydrostatic pivot bearing consisting of a first body, a second body, bearing faces therebetween and a hydrostatic fluid pressure pocket in at least one of said bearing faces;

wherein said first body is of substantially cylindrical configuration around a first axis,

wherein said first body has a bearing bed face of part-cylindrical configuration around a second axis,

wherein said second axis extends normally to said first axis and through said first axis,

wherein said second body has a part-cylindrical pivot-portion with a bearing face of part-cylindrical configuration around said second axis,

wherein said bearing bed face and said bearing face of part-cylindrical configurations have substantially equal radii around said second axis; wherein said first axis and said second axis are meeting in an axes centre point;

wherein said bearing face of said second body is borne on said bearing bed face of said first body and able to slide therealong when said second body pivots on said first body while said faces are remaining at all times in close engagement along each other for sealing said fluid pressure pocket therebetween to prevent leakage thereout;

wherein said second body has a third axis extending normal to and through said second axis and extending through said axes centre point whereby said third axis extends through said second and said first axis;

wherein said third axis swings through said first axis when said second body pivots relatively to said first body;

and wherein an improvement is provided which consists therein, that said part-cylindrical pivot-portion of said second body is provided with ends of part-cylindrical configuration of substantial radius around said third axis, whereby the length of the bearing area between said bearing faces is slightly shorter than the outer diameter of said first body for the provision of a maximum of bearing face area for the obtainment of the capability to carry a maximum of load by said bodies.

4,206,691

BOX FORMING APPARATUS

Dennis D. Lines, Sioux City, Iowa, assignor to Iowa Beef Processors, Inc., Dakota City, Nebr.

Filed May 2, 1978, Ser. No. 902,195
Int. Cl.[2] B31B 1/52
U.S. Cl. 93—49 R 15 Claims

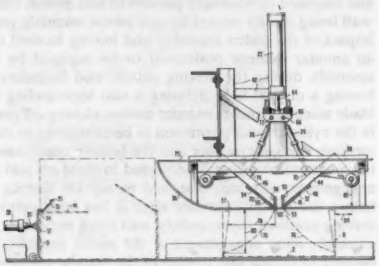
1. An apparatus for moving the flaps of a box which has a rectangular base, sidewalls extending perpendicularly from the base, and first and second flaps connected to the upper edges of opposed first and second sidewalls, each of said flaps being bendable to a final position lying inwardly of and substantially parallel to its respective sidewall, said apparatus comprising,

means for supporting a said box at a work station,

means for bending said flaps to their final positions including a first folder member for contacting said first flap, a second folder member for contacting said second flap, and actuating means for said folder members,

means for supporting the first folder member for movement in an arcuate path which extends from a retracted position outside the box to an extended position located in said box adjacent said first sidewall,

means for supporting said second folder member for movement in an arcuate path which extends from a retracted position outside the box to an extended position located in said box adjacent said second sidewall,



said actuating means including means for moving each of said folder members from its retracted position to its extended position to move the respective said flap to its final position,

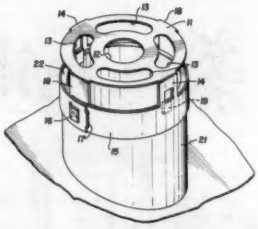
means for moving the box to said work station, means for initially bending the flaps inwardly from positions parallel to their respective sidewalls to positions perpendicular to their respective sidewalls prior to arrival of the box at said work station, and means at said work station for holding said flaps at their initially bent positions prior to movement of said folder members from their retracted positions to their extended positions.

4,206,692

VENT PIPE COVER

Earl D. Johnston, 1226 Ridgeview, Tyler, Tex. 75701

Filed Mar. 27, 1979, Ser. No. 24,244
Int. Cl.[2] F23L 17/02
U.S. Cl. 98—122 6 Claims



1. A unitary flat blank formed of bendable sheet material for use in constructing a vent pipe cover, said blank comprising a central substantially circular portion having vent openings formed therethrough and adapted for registration with the top of a vent pipe, a first pair of diametrically opposed bendable arms radiating from said center circular portion of the blank and adapted to be bent at right angles to the center circular portion to lie along the outer surface of a vent pipe, a second pair of bendable arms which are diametrically opposed and spaced substantially 90 degrees from the first pair of arms and adapted to be bent 90 degrees to said circular portion to lie

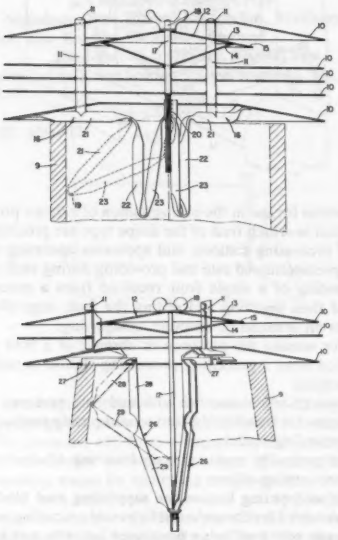
along the outer surface of a vent pipe, a pair of parallel substantially equal length strap elements carried by the outer ends of the arms in said second pair and extending equidistantly beyond opposite sides of such arms and being parallel to the arms of the first pair, locking tabs on the opposite ends of said strap elements, and the strap elements having locking slots near their opposite ends for the reception of the locking tabs of the opposing strap elements, the strap elements being bendable into surrounding relationship with a vent pipe to completely encircle it and the locking tabs after insertion through said locking slots being bendable into interlocking relationship with the slots, said first pair of arms being then disposed interiorly of said straps which are encircling a vent pipe.

4,206,693

CHIMNEY COWLS

Arthur W. Mitchell, Kilkeel County Down, Kilkel County Down, Northern Ireland

Filed Sep. 18, 1978, Ser. No. 942,914
Int. Cl.[2] F23L *17/02*
U.S. Cl. 98—59 **4 Claims**



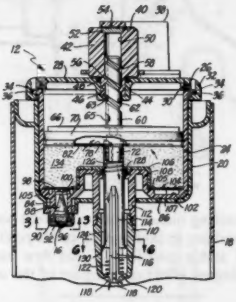
1. A chimney cowl comprising a series of annular vanes lying in horizontal planes, central apertures in said vanes, a common axis about which the vanes are centered and arranged in predetermined spaced relationship, a plurality of supports, an annular device mounted coaxially with said vanes and between two adjacent vanes that, when the cowl is fitted to a chimney outlet, are remote from the chimney outlet, the device masking the central apertures in said vanes, means for clamping the cowl in position to a chimney outlet comprising at least two laterally extending elongate members each having two ends, one end of each member being fixed to the lowermost vane, the other end of each member terminating in a union element, and an elbow between said ends, said union being movable vertically to cause movement of the elbows in a lateral direction towards or away from the chimney wall.

4,206,694

INFUSER PRIMARILY INTENDED FOR USE IN MAKING COFFEE

Paul M. Moskowitz, Brooklyn, and Yuliy Rushansky, Bronx, both of N.Y., assignors to Salton, Inc., Bronx, N.Y.

Filed May 22, 1978, Ser. No. 908,053
Int. Cl.[2] A23F *1/00*
U.S. Cl. 99—295 **10 Claims**



1. An infuser including a container having a top, a bottom, an inlet leading to the bottom of said container and an outlet leading from the interior of said container, said outlet being located above said inlet, said infuser also including a filter means positioned between said inlet and said outlet for maintaining material being infused within the interior of said container in which the improvement comprises:

said filter means being movable within the interior of said container relative to said inlet so as to be capable of holding different quantities of material to be infused in a packed condition within the interior of said container adjacent to the bottom of said container, and

said outlet having an entrance, the position of said outlet being adjustable relative to the interior of said container so as to enable the position of said entrance to be varied to correspond to the position of said filter means within said container in order to prevent liquid from accumulating within said container above said filter means,

positioning means for simultaneously adjusting the positions of said filter means and said outlet so as to hold said material and maintain said entrance of said outlet in a position corresponding to said position of said filter means.

4,206,695

CORN POPPING APPARATUS WITH SPRING POWERED DISCHARGE

Charles D. Cretors, Lake Forest, Ill., assignor to C. Cretors and Company, Chicago, Ill.

Filed Aug. 25, 1978, Ser. No. 936,907
Int. Cl.[2] A23L *1/18*
U.S. Cl. 99—323.9 **3 Claims**

1. An apparatus comprising:

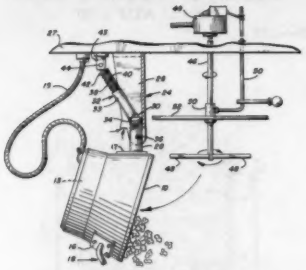
a frame;

a container for retaining discrete particles;

means mounting said container on said frame for assisting movement between and retaining said container in a first stable position for maintaining said particles and a second stable position for discharging said particles, said mounting means including a connecting means having a first bracket attached to said frame, a shaft having one end pivotally connected to said first bracket and having another end disposed within a cylinder, an arm having a first end pivotally secured to said cylinder and having a second end secured to said container, and a second bracket attached to said frame and pivotally secured to said arm

between said first and second ends to provide a pivot point;

whereby said container is free to rotate under the influence



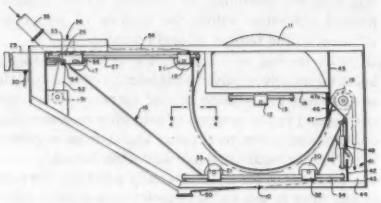
of said connecting means about said pivot point from said first stable position to said second stable position and from said second stable position to said first stable position requiring minimal effort on the part of the operator.

4,206,696

CHEESE CURD PROCESSING APPARATUS AND METHOD

George N. Grant, Canastota, N.Y., and Douglas B. Campbell, Santa Rosa, Calif., assignors to Bepex Corporation, Santa Rosa, Calif.

Filed May 16, 1977, Ser. No. 797,569
Int. Cl.[2] A01J *11/06, 25/11*
U.S. Cl. 99—457 **11 Claims**



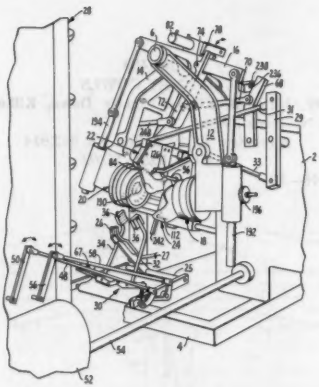
1. An apparatus for processing fresh cheese curd together with a substantial liquid content, comprising a cylindrical drum mounted for rotation about a horizontal axis, an endless flexible belt in the form of a screen made of non-metallic plastic material, the opposite side edges of said belt comprising higher strength portions free of screen openings, means including first, second and third rotatable rolls, said rolls carrying the belt whereby the belt is disposed to extend in a generally horizontal direction from the first roll over which it is looped to one side of the drum where it engages the second roll and from thence extends downwardly and about the lower peripheral surface of the drum to a region adjacent the other side of the drum where it is looped about the third roll and then returned back to the first roll below and in spaced relationship to the drum, one surface of said belt facing said lower peripheral surface of said drum as the belt moves downwardly and about the drum, means for maintaining a predetermined tensioning of the belt, means for feeding wet curd to that portion of the belt extending between the first and second rolls, said curd being fed to said one said surface of said belt, and means for driving the belt whereby curd deposited on the belt is caused to be carried about the lower peripheral surface of the drum between said drum surface and the belt, thereby causing the curd to be pressed by the belt to cause liquid to be expressed therefrom, the portion of said belt between said side edges flexing to conform to the curd deposited on the belt, the maintaining of said predetermined tensioning of the belt causing said side edges to engage said drum surface for thereby holding the curd between the belt and drum surface, said drum being driven at the same speed as the belt thereby maintaining a gentle pressure on the curd and thereby eliminating the application of shearing forces to the curd.

4,206,697

METHOD AND APPARATUS FOR SELECTIVE PITTING OF FRUITS OF THE DRUPE TYPE

Konrad E. Meissner, Lafayette, Calif., assignor to California Processing Machinery, San Ramon, Calif.

Continuation-in-part of Ser. No. 880,229, Feb. 22, 1978. This application Jul. 5, 1978, Ser. No. 922,183
Int. Cl.[2] A23N *4/04, 4/22*
U.S. Cl. 99—489 **4 Claims**



1. Apparatus for use in the pitting station of a drupe processing operation in which fruit of the drupe type are processed at a series of processing stations, said apparatus operating cyclically at a predetermined rate and providing during each cycle for the loading of a single fruit received from a preceding station and then bisecting and pitting the fruit, regardless of whether its pit is sound or unsound, comprising:

means for sensing the presence or absence of a fruit to be supplied from a preceding processing station to said pitting station;

means operatively connected with said fruit presence sensing means for transferring fruit to said pitting station from said preceding station;

a pair of generally coplanar body-bisecting blades having opposed cutting edges;

means at said pitting station for supporting said blades to receive such a fruit transferred from said preceding station and, upon said fruit being positioned between said blades with its suture generally in the plane of said blades, for moving one blade toward the other in said plane to engage said pit in either a first position in which said blades are in gripping relation to a sound pit or past said first position to a second position with at least one blade within a split pit;

fruit gripping means disposed adjacent opposite sides of said plane and supported for movement into coaxial gripping relation with the halves of a fruit and operable for gripping engagement with said fruit halves, the body of the fruit being bisected by said blades and the pit of which is engaged by said blades, and means for so moving said gripping means and for rotating them about their mutual axis upon the gripping engagement of a sound pit by said blades for shearing said fruit halves from said sound pit;

a coring spoon mounted to one of said blades for rotation about an axis extending through said coring spoon, said coring spoon being dimensioned such that rotation about

said transversely extending axis will describe a body of revolution at least as large as said pit; said coring spoon being mounted within an aperture which extends through said blade and which is spaced from said blade cutting edge, whereby the blade portion between the cutting edge and the aperture serves to shroud the coring spoon during moement of the blade through the fruit;

means responsive to the movement of said one blade to said second position for shifting said blades and said coring spoon through the fruit from said second position, in which said coring spoon is remote from said pit, to a third position in which said blade cutting edges are remote from said pit and in which said coring spoon is adjacent said gripped fruit halves and extending around a portion of said pit; and

coring spoon actuating means operatively connected to said coring spoon for rotating said coring spoon about said spoon axis of rotation when said blades and said coring spoon are shifted to said second position, whereby rotation of the coring spoon will cut the split pit from the fruit halves; and

means for disabling the gripping operation of said fruit gripping means for one said cycle upon said fruit presence sensing means sensing the absence of a fruit for transfer to said pitting station.

4,206,698

BALING APPARATUS

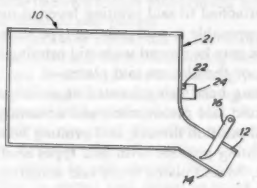
John Nicholson, Port Fowey, School Rd., Waltham St. Lawrence, near Reading, Berkshire, England

Filed Jul. 25, 1978, Ser. No. 927,864

Claims priority, application United Kingdom, Jul. 29, 1977, 31875/77

Int. Cl.[2] B65B *13/18*

U.S. Cl. 100—17 **5 Claims**



1. In a baling apparatus of the type including a large generally rectangular container into which baleable material is fed to fill the container and form a large bale which is encircled by large bale ties for sustaining the large bale, the improvement comprising: means for encircling small bunches of said baleable material with small bale ties as said material is fed into said container to successively form a plurality of individual self-sustaining small bales substantially smaller in size than said large bale, whereby removal of the large bale ties produces a plurality of self-sustaining small bales instead of a mass of loose material.

4,206,699

RETRACTING BOLSTER FOR A PRESS

Donald J. Hemmelgarn, Minster, Ohio, assignor to The Minster Machine Company, Minster, Ohio

Filed Apr. 23, 1979, Ser. No. 32,180

Int. Cl.[2] B30B *15/06*

U.S. Cl. 100—53 **18 Claims**

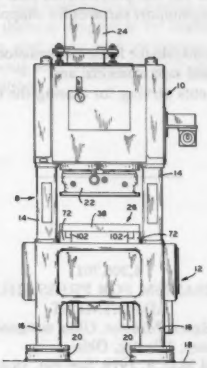
1. A press having a frame structure with a crown and a bed, a slide guided by the frame structure for reciprocating movement in opposed relation to said bed, and a bolster assembly mounted to said bed, said bolster assembly comprising:

a base mounted to said bed,

a bolster having an upper surface in facing relation to said slide,

said bolster being supported on said base and guided by said base for rectilinear movement in opposed relation to said bed and slide between extended and retracted positions,

hydraulic piston and cylinder means associated with said base and bolster for rigidly holding said bolster in its extended position when charged with hydraulic pressure and for permitting said bolster to retract when hydraulic pressure is released,



means connected to said base for rigidly holding said bolster against lateral movement relative to the axis of rectilinear movement thereof when said bolster is in the extended position, and

selectively actuatable valve means for releasing hydraulic pressure in said piston and cylinder means to cause said bolster to retract to its retracted position thereby achieving slide and bolster separation sufficient to permit easy die access for maintenance purposes and the like.

4,206,700

ROLLING DEVICE

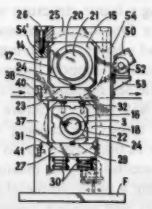
Wolf-Gunter Stotz, Ravensburg, and Karl Kiesel, Mochenwangen, both of Fed. Rep. of Germany, assignors to Escher Wyss Limited, Zürich, Switzerland

Filed Jan. 22, 1979, Ser. No. 5,289

Claims priority, application Switzerland, Feb. 7, 1978, 1338/78

Int. Cl.[2] B30B *3/04*; B21B *13/02*

U.S. Cl. 100—162 B **13 Claims**



1. A rolling device comprising:

at least one controlled deflection roll;

said controlled deflection roll comprising:

a support;

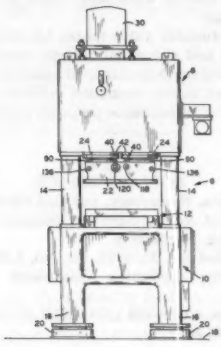
a rotatable roll shell rotatable about said support;

support elements supported between said support and said roll shell;

said roll shell being movable relative to the support in at least one pressure plane such that the support elements are suitable for producing contact and lifting movements;

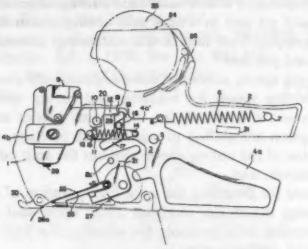
a support arrangement for the rolling device;
said support arrangement having substantially vertical side elements at which there is supported the controlled deflection roll;
said side elements possessing open cutouts extending transversely with respect to the axial direction of the controlled deflection roll;
said cutouts serving for the reception of bearing blocks for the controlled deflection roll;
bearing blocks for the roll provided for said cutouts;
said cutouts having support surfaces for supporting the bearing blocks;
closure elements suitable for force transmission and detachably connected to said side elements; and
said closure elements serving for closing the cutouts.

4,206,701
LOCK MECHANISM FOR PRESS SHUTHEIGHT ADJUSTMENT
Donald J. Hemmelgarn, Minster, Ohio, assignor to The Minster Machine Company, Minster, Ohio
Filed Mar. 8, 1979, Ser. No. 18,452
Int. Cl.² B30B 1/06
U.S. Cl. 100—257 **17 Claims**



1. In a press having a frame structure with a crown portion and a bed portion, a first support means connected to said frame bed portion and adapted for having one half of a die set mounted thereto, a second support means adapted for having the other half of a die set mounted thereto, and drive means connected between said frame structure crown portion and said second support means for causing said second support means to reciprocate in opposed relation to said first support means, said first and second support means being spaced apart, the improvement being a press shutheight adjustment mechanism comprising: first and second keyed together threaded adjustment means threadedly connected between one of said drive means of said frame structure bed portion and the respective said support means connected thereto for adjusting the spacing between said first and second support means when said adjustment means are turned, a wedge-shaped lock element positioned adjacant one of said adjustment means, and means for urging said lock element against said one threaded adjustment means to wedge said one adjustment means into a locked relationship relative to said one of said drive means or said frame structure bed portion.

4,206,702
CONSTANT PRESSURE PRINTING MECHANISM FOR HAND LABELER
Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan
Filed Apr. 4, 1978, Ser. No. 893,335
Claims priority, application Japan, Apr. 8, 1977, 52/039539
Int. Cl.² B41J 5/00
U.S. Cl. 101—291 **11 Claims**



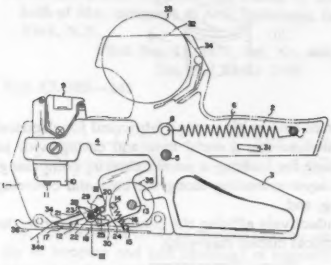
1. A constant pressure printing mechanism for use in printing labels, or the like, comprising:
an actuating lever movable between a released position and a squeezed position; said actuating lever being comprised of an operating lever and a printing lever; said operating lever being pivotally connected to said printing lever, thereby to enable said operating and printing levers to pivot with respect to one another;
a printing head carrying a printing type; said printing head being attached to said printing lever to move therewith;
a platen opposable to said printing type such that said printing type may be moved with said printing lever to imprint a label, or the like, on said platen;
said printing head being located at an inoperative position apart from said platen when said actuating lever is at the released position thereof; said printing head being located at a printing position with said types abutting a label, or the like, on said platen when said actuating lever is at the squeezed position thereof;
shock absorbing means interposed between said operating lever and said printing lever for normally biasing said operating lever and said printing lever to pivot with respect to each other and to bias said printing lever with respect to said operating lever in a direction to cause said printing type to abut said platen;
retaining means in engagement with said printing lever when said printing head is at the inoperative position thereof for blocking pivotal movement of said operating lever, with respect to said printing lever, in the direction of motion of said actuating lever to the squeezed position thereof, whereby, when said operating lever is first moved from said released position towards said squeezed position, said operating lever and printing lever move without any relative motion therebetween;
said platen being shaped for engaging said retaining means as said printing head moves toward the printing position thereof; upon engagement between said retaining means and said platen, said retaining means being moved out of engagement with said printing lever, thereby freeing said operating lever for pivoting, with respect to said printing lever, in the direction of motion of said actuating lever to the squeezed position thereof, whereby said operating lever is freed to pivot against the biasing force of said shock absorbing means, even when said printing head is at the printing position thereof.

4,206,703

CONSTANT PRINTING PRESSURE MECHANISM FOR PORTABLE LABEL PRINTING MACHINE, OR THE LIKE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato, Tokyo, Japan

Filed Apr. 28, 1978, Ser. No. 901,084
Claims priority, application Japan, May 16, 1977, 52-55284
Int. Cl.[2] B41J 5/00
U.S. Cl. 101—291 27 Claims



1. A constant pressure printing mechanism for a label printing machine, or the like, comprising:

a frame;

a platen movably supported by said frame and movable toward and away from a printing head;

a printing lever for being operated to move toward and away from said platen; a printing head carried by said printing lever and movable thereby toward and away from said platen; said printing head carrying types and said printing head types facing toward said platen and being abuttable therewith upon said printing lever moving said printing head to said platen;

a lifting member rockably connected to said frame for rocking with respect to said frame; said lifting member being rockable in one direction to a platen lifting position, and during such rocking movement, said lifting member lifts said platen toward said printing head; said lifting member being rockable in a second direction, opposite said one direction to a platen released position, and during such rocking movement in said second direction, said lifting member rocks to permit said platen to move away from said printing head;

an operator rigidly connected with said printing lever and movable therewith and positioned and shaped for being separated from said lifting member and for remaining separated from said lifting member until said types approach said platen; said operator engaging said lifting member upon said types approaching said platen but before said types abut said platen and said operator engaging said lifting member at a location for rocking said lifting member to said platen lifting position thereof.

4,206,704

CONSTANT PRESSURE PRINTING MECHANISM FOR PORTABLE LABEL PRINTING MACHINE OR THE LIKE

Yo Sato, Tokyo, Japan, assignor to Kabushiki Kaisha Sato Kenkyusho, Tokyo, Japan

Filed May 25, 1978, Ser. No. 909,431
Claims priority, application Japan, May 27, 1977, 52/061220
Int. Cl.[2] B41J 5/00
U.S. Cl. 101—291 19 Claims

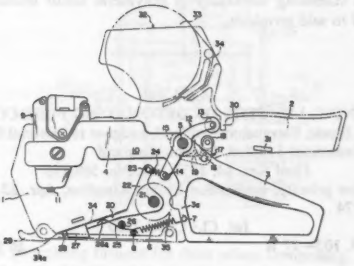
1. A printing machine for labels, or the like, comprising:

a driving lever; a printing head carrying printing types and connected with said driving lever for being moved by said driving lever between a printing head printing position, at which a label on a platen is printed by said types, and a printing head released position;

a platen positioned in opposition to said types and being movable from a platen released position to a platen printing position; with said platen at said platen printing position, said types of said printing head being against a label on said platen when said printing head is at said printing head printing position; biasing means normally biasing said platen to said platen released position;

a pressure member attached to said driving lever and movable therewith;

a rocking lever, which is supported for motion between a rocking lever released position and a rocking lever actuated position; said rocking lever having a pressure receiving member thereon adapted to be engaged by said pressure member, and upon such engagement, said pressure member moving said rocking lever to said rocking lever actuated position;



an elastic buffer connected between said rocking lever and said platen for moving said platen, against the bias of said biasing means, to said platen printing position as said rocking lever moves to said rocking lever actuated position;

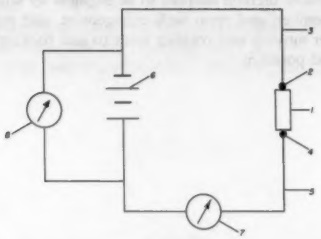
said pressure member and said pressure receiving member being respectively shaped and positioned such that after engagement between said pressure member and said pressure receiving member and after the movement of said driving lever has moved said platen to said platen printing position and has moved said printing head to said printing head printing position, said pressure member and said pressure receiving member being caused to separate, thereby freeing said rocking lever to return to said rocking lever released position and freeing said platen to be returned by said biasing means to said platen released position.

4,206,705

ELECTRIC INITIATOR CONTAINING POLYMERIC SULFUR NITRIDE

Zafar Iqbal; Harry D. Fair, Jr., both of Morristown, N.J., and David S. Downs, Flanders, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 19, 1978, Ser. No. 916,680
Int. Cl.[2] F42D *1/04*; F42C *19/12*; F42B *3/12*
U.S. Cl. 102—23 2 Claims



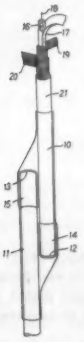
1. An electric initiator comprising a container, and, located therein, a pair of spaced terminals with an explosive initiating means consisting essentially of polymeric sulfur nitride connected to said terminals.

4,206,706

JOINING LENGTHS OF DETONATING FUSE-CORD

Daniel Steele, Stevenston, Scotland, assignor to Imperial Chemical Industries Limited, London, England

Filed Apr. 14, 1975, Ser. No. 568,135
Claims priority, application United Kingdom, Apr. 22, 1974, 17496/74
Int. Cl.[2] C06C *7/00*
U.S. Cl. 102—27 R 10 Claims



1. A method of joining two or more lengths of flexible detonating fuse-cord having an explosive core enclosed within a yieldable water-proof envelope, said method comprising placing the ends of the lengths in parallel contact, surrounding the contacting lengths with a heat-shrinkable sleeve of synthetic plastics film, and heating the sleeve to cause it to shrink and bind the lengths of fuse-cord together.

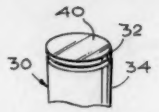
7. An assembly of two or more lengths of detonating fuse-cord having an explosive core enclosed within a yieldable water-proof envelope, said lengths being in parallel contact and being bound together by heat-shrunk synthetic plastics film.

4,206,707

ELECTROMAGNETIC HAZARD SUPPRESSION TECHNIQUES

Marvin W. Shores, Pomona, Calif., assignor to General Dynamics Corportation, Pomona, Calif.

Filed Nov. 22, 1977, Ser. No. 854,434
Int. Cl.[2] F42B *5/08*
U.S. Cl. 102—46 22 Claims



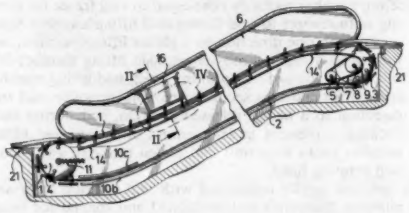
1. A shield for an ammunition round fabricated for electrical ignition, the round having a metal base and casing with an opening in the base for locating a primer therein, comprising:
a conductive layer extending along the base and covering said opening; and
means for conductively affixing the conductive layer to the base in electrical circuit therewith.

4,206,708

TRANSPORTER WITH PALLET CARS COUPLED WITH EACH OTHER FOR ESCALATORS

Fritz Behle, Hattingen, Fed. Rep. of Germany, assignor to O & K Orenstein & Koppel Aktiengesellschaft, Berlin, Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,313
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1977, 2718169
Int. Cl.[2] B65G *17/06*, *17/46*; B61B *13/12*
U.S. Cl. 104—172 B 10 Claims



1. A transporter system for positive non-slipping support and transport of baggage conveyor cars between ends of the transporter system, comprising
a plurality of pallet cars operatively connected to one another forming an endless, moveable conveyor belt, each of said pallet cars being formed with a slot therethrough and having a lower side,
carrying axles mounted on the lower side of each of said pallet cars,
an arc-shaped driver being pivotable about one of said carrying axles, said carrying axles constituting a pivot point, on the lower side of each of said pallet cars, a portion of said driver extending slidably into said slot,
bracket means for pivotably mounting said driver on said one carrying axle on each of said pallet cars,
a roller rotatably secured at a point on said driver opposite said portion extending into said slot,
track means for supporting said rollers moveably thereon and thereby supporting said drivers, said track means, along an intermediate transportation path between the ends of the transporter system, cooperating with said rollers during a transportation operation of a baggage conveyor car in said intermediate transportation path so as to support said driver projecting through said slot of said

pallet car extending thereabove so as to engage behind a catch secured at a bottom of the baggage conveyor car, and

means for disengaging said driver from the catch of the baggage conveyor car shortly before reaching the ends of the transporter system.

4,206,709

HOPPER CAR FOR LIQUID UNIT-TRAIN SERVICE

Steven L. Jantzen, St. Louis, and Dallas W. Rollins, St. Charles, both of Mo., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Sep. 11, 1978, Ser. No. 940,986
Int. Cl.[2] B61D *3/00*
U.S. Cl. 105—243 **6 Claims**

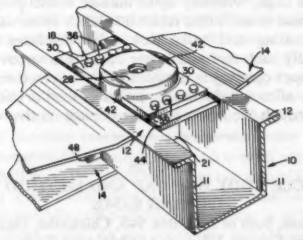
1. An enclosed covered hopper railway car having a plurality of hoppers and end openings at opposite ends of the car located in the upper portion of end hoppers; an external conduit extending through each of said end openings and adapted to engage an end opening in an adjacent car to provide fluid communication between adjacent hopper cars to provide a unit train of at least several cars in length; a tube extending from at least one end opening to the lower portion of one of said end hoppers whereby the car can be unloaded by positive pressure applied at one end of a train of cars; a hopper bottom attached to the lower portion of each of said hoppers; a longitudinal tube extending through the lower portion of adjacent hoppers below said bottoms to provide fluid communication between adjacent hoppers; openings in said hopper bottoms providing fluid communication with said longitudinal tube; whereby said longitudinal tube provides fluid communication between adjacent hoppers to facilitate loading and unloading said car with liquid lading.

4,206,710

RAILWAY CAR CENTER PLATE FILLER ARRANGEMENT

John H. Spence, Munster, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed May 15, 1978, Ser. No. 905,678
Int. Cl.[2] B61F *1/14, 5/16*; B61G *7/10*
U.S. Cl. 105—420 **17 Claims**



1. A center plate reinforcing and mounting arrangement for railway vehicles having at each end a longitudinally extending sill having spaced side walls and having body bolsters attached and extending outwardly from said sill, the improvement comprising:

a modular center filler;

said center filler comprising a bottom cover plate, front and rear cover plates;

said center filler also having pairs of rigidifying means positioned between said front and rear cover plates;

said pairs of rigidifying means including longitudinal means attached to the bottom cover plate and to the front and rear cover plate;

said pairs of rigidifying means also including transverse means attached to the bottom cover plate and to the longitudinal means and forming a reinforcing gusset box-beam means within the center filler;

center plate means including skirt means;

means for attaching said center plate skirt means solely to said bottom cover plate; and

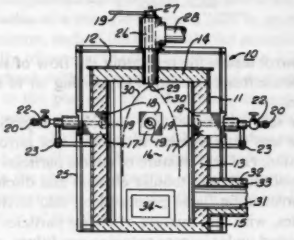
means for attaching said center filler to said sill for transmitting forces and rigidifying the car at the junction of said sill and said bolster.

4,206,711

METHOD AND APPARATUS FOR PROCESSING WASTE FLUID

Kurt Konrad, Pittsburgh, Pa., assignor to Angelo J. Noce, McMurray, Pa.

Filed Oct. 4, 1978, Ser. No. 948,393
Int. Cl.[2] F23G *7/04*
U.S. Cl. 110—238 **25 Claims**



1. A processing furnace for fluid refuse comprising:

(a) a vertical insulated combustion chamber including a top and a bottom;

(b) radiant burner means positioned on the sides of said chamber, capable of heating said chamber with radiant heat to a temperature sufficiently high to combust fluid refuse sprayed into said chamber;

(c) waste fluid spray means operable through said top of said chamber to spray said fluid downwardly in a predetermined spray pattern into said chamber, said spray pattern which prevents said spray from contacting the side walls of said chamber and which prevents said spray from contacting said burner means;

(d) combustion air supply means operable to supply combustion air to said chamber; and

(e) exhaust port means adjacent said bottom of said chamber operable to draw off combustion gases from within said chamber.

4,206,712

FUEL-STAGING COAL BURNER

Joel Vatsky, Millburn, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Jun. 29, 1978, Ser. No. 920,295
Int. Cl.[2] F23K *5/00*
U.S. Cl. 110—264 **7 Claims**

1. A fuel-staging burner assembly for use with pulverized coal with separate fractions of the coal being burned under different stoichiometric conditions to reduce the production of nitrogen oxides, comprising:

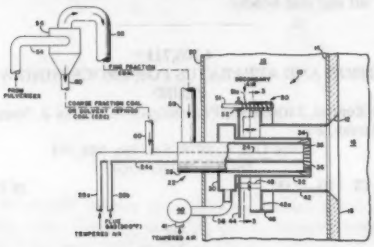
a burner nozzle adapted for operative attachment to a combustion chamber and including:

a tubular element for receiving a mixture of coarse particles of pulverized coal mixed with carrier primary air;

conduit means coupled to said tubular element for introducing a heated gas to said tubular element to initiate devolatilization of said coarse coal particles; and

a shell element disposed concentrically about said tubular element for receiving a mixture of fine particles of pulverized coal mixed with carrier primary air;

means coupled to a source of fluid and disposed in operative relationship to said tubular and said shell elements for directing a swirling flow of fluid at the outlets of said tubular and said shell elements to maintain controlled turbulence of the combustion flame; and



flow control means for regulating the flow of substantially turbulence-free combustion supporting air to said burner nozzle,

whereby said mixture of fine particles is rapidly devolatilized in said shell element to achieve low nitrogen oxides formation, and said mixture of coarse particles is partially devolatilized in said tubular element and discharged into the surrounding flame produced by said mixture of fine particles, with said mixture of coarse particles being rapidly heated under intense reducing conditions, resulting in combustion with low production of nitrogen oxides.

4,206,713

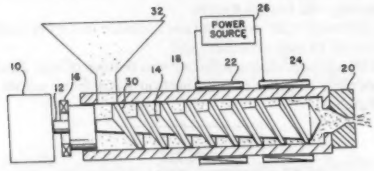
CONTINUOUS COAL PROCESSING METHOD

Porter R. Ryason, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 623,389, Oct. 17, 1975, abandoned. This application Sep. 28, 1976, Ser. No. 727,444

Int. Cl.² F23B *7/00*

U.S. Cl. 110—347 **17 Claims**



1. A method of processing particulate coal comprising the steps of:

Compressing said coal at high pressure in the barrel of an extruder while heating it to a temperature at which the coal mass can be extruded with low energy;

adding a liquid having a high critical pressure to the coal before extruding the coal through a die; and

continuously extruding said heated, compressed coal and liquid through a die having a diameter smaller than the barrel diameter.

4,206,714

MANUALLY OPERABLE GRASS SEEDER

Robert F. Walsh, 167 W. Clinton Ave., Bergenfield, N.J. 07621

Filed Aug. 30, 1978, Ser. No. 938,324

Int. Cl.² A01C *5/02*

U.S. Cl. 111—92 **13 Claims**

1. A manually operable grass seeder for preparing and reseeding bare spots comprising:

an elongated, telescoping tubular member including relatively slidable upper and lower tubes, said upper tube including a storage hopper for seeds therein adjacent the upper end thereof, a ball check valve assembly fixedly mounted within the upper tube adjacent the lower end thereof, said ball check valve assembly defining the lower end of said storage hopper, said ball check valve including a ball mounted in a cage, said cage having an upper and lower opening, said upper opening being in communication with said storage hopper, said ball check valve further including a first spring means for biasing said ball downwardly to cover and seal said lower opening;

said lower tube being telescopingly received within said upper tube and including means at the upper end thereof for actuating said ball check valve to an open position; and

second spring means disposed between said upper and lower tubes and operable to bias said telescoping tubes in the extended position wherein said ball covers and seals said lower opening in said cage with said upper opening being left uncovered thereby allowing a fixed amount of seed to fill said cage, whereby upon manual telescoping of said upper and lower tubes relative to each other said means for actuating said ball check valve displaces said ball upwardly such that said lower opening is uncovered and said upper opening is simultaneously covered and sealed thereby allowing the fixed amount of seed in said cage to pass through the lower tube for deposit on the bare spot.

4,206,715

VEHICLE BODY END CAP AND METHOD OF FORMING SAME

Carl B. Greene, both of P.O. Box 948, Chickasha, Okla. 73018, and Carl B. Greene, III, both of Chickasha, Okla.

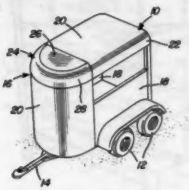
Filed May 5, 1978, Ser. No. 903,157

Int. Cl.² B21D *53/88*

U.S. Cl. 113—116 F **7 Claims**

1. The method of forming a closure end cap between an upstanding end wall of a vehicle body and a substantial horizontal roof of the body in which the roof is provided with a substantially flat top portion and downwardly curved side edge portions and the end wall is provided with rearwardly extending and generally parallel side edge portions and a gen-

erally semi-cylindrical curved front portion, said method comprising forming a semi-cylindrical sheet metal member of substantially C-shape cross section to form an intermediate product, cutting the sheet metal member in half along its longitudinal arc centerline, positioning a generally semi-circular flat sheet metal section, whose radius of curvature along its gener-



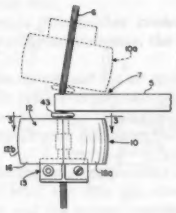
ally semi-circular edge closely corresponds to the short radius of curvature longitudinal arc edge of one of the halves of said sheet metal member, with its semi-circular edge juxtaposed said short radius of curvature longitudinal arc edge of said one half member, and securing the juxtaposed edges of said member and section together.

4,206,716

CLAMPING ROLLER ASSEMBLY

Bruce W. Anderson, 1242 Puerto Natales, Placentia, Calif. 92670

Filed Jun. 14, 1978, Ser. No. 915,517
Int. Cl.² B63H *9/04*
U.S. Cl. 114—102 **10 Claims**



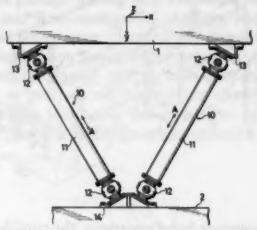
1. A roller assembly adapted for securement to a cable on a sailboat or the like adjacent a bar extending laterally from the upstanding mast which spreads the cable away from the mast, the assembly comprising a roller member and roller mounting axle member, each of said members comprising a pair of mating substantially identical half sections adapted to be secured together surrounding a length of said cable, each half section of the roller member includes a semicircular outer rim region with a diametral chord intersected at a central axis by a semicircular half bore, the chord region on one side of the half bore including a stud extending generally perpendicularly therefrom with laterally compressible wing means at its free extremity, the chord region on the other side including an aperture with a first transverse dimension slightly less than the maximum uncompressed lateral dimension of the wing means to accept and snappingly retain the stud from the opposing mating half section and thereby assemble one half section to one another at a diametral axial plane with a central bore of said roller member surrounding and axially retained on the axle member, the axle member half sections including means to clampingly retain said axle member to the cable in substantial nonrotative and axially fixed relationship thereto.

4,206,717

MOORING APPARATUS

Hiroji Okuda, Nara, Japan, assignor to Koyo Seiko Company Limited, Osaka, Japan

Filed Aug. 9, 1978, Ser. No. 933,131
Claims priority, application Japan, Apr. 27, 1978, 53-51429
Int. Cl.² B63B *21/00*
U.S. Cl. 114—230 **4 Claims**



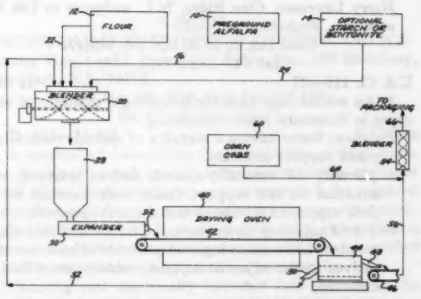
1. A mooring apparatus for use at each of at least two locations for mooring a floating structure to a pier, the mooring apparatus comprising two universal joint assemblies arranged along two sides of a triangle having a base in parallel to the floating structure, each of the universal joint assemblies including an axially telescopic shank with a universal joint at each end of the shank with one universal joint of each shank being connected to the pier and the other being connected to the floating structure, each of said shanks comprising two tubular members one of which is slidable within the other axially of the shank and a plurality of elastic means provided circumferentially within the shank for exerting telescopic force to bias the tubular members away from each other during axial expansion or contraction of the shank.

4,206,718

ANIMAL LITTER PROCESS

Andrew I. Brewer, Long Beach, Calif., assignor to Star-Kist Foods, Inc., Terminal Island, Calif.

Continuation-in-part of Ser. No. 348,053, Apr. 5, 1973, abandoned. This application Feb. 5, 1975, Ser. No. 547,118
Int. Cl.² A01K *29/00*
U.S. Cl. 119—1 **20 Claims**



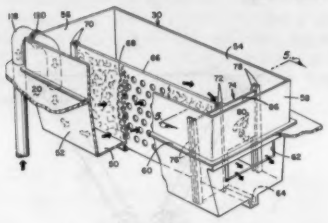
19. An expanded pellet for use as an animal litter comprising a homogeneous dispersion of cooked alfalfa particles bound together with gelatinized starch.

4,206,719

AQUARIUM HOOD APPARATUS

Edwin E. Faris, Wyckhoff, N.J., assignor to Metaframe Corporation, Elmwood Park, N.J.

Filed Apr. 17, 1978, Ser. No. 896,683
Int. Cl.[2] A01K 63/00
U.S. Cl. 119—5 10 Claims



1. In an aquarium hood apparatus, the combination comprising:

a base member for enclosing the open end of an aquarium, said base member having a generally planar portion;

a generally trough-shaped filter housing supported within an opening in said planar portion, said housing having a portion thereof depending from said base member, said housing having a bottom, sidewalls, end walls and an open top;

a partition secured within said housing between said sidewalls adjacent one end wall, said partition having the upper edge thereof displaced from the plane of said open top;

an opening in said one end wall of said housing disposed beneath said base member;

means on the other end wall and the facing surface of said partition for receiving a filtration cartridge to divide the volume therebetween into a first aquarium water receiving chamber and a cleansed fluid chamber; and

fluid passage means within said partition for placing said cleansed fluid chamber in fluid communication with the chamber between said one end and said partition for passage of cleansed fluid therethrough through said opening in said one end wall, said filtration cartridge having the upper edge thereof coextensive with the upper edge of said partition whereby to permit overflow from said fluid receiving chamber through said opening in the event of clogging of said filtration cartridge.

4,206,720

ANIMAL CAGE RACK INCORPORATING SHELF LEVELING DEVICE

Albert Ruggeri; Joseph Ruggeri, both of Flourtown, Pa., and Harry Lawrence, Glen Ridge, N.J., assignors to Lab Products, Inc., Rochelle Park, N.J.

Filed Oct. 6, 1978, Ser. No. 949,272
Int. Cl.[2] A01K 1/01, 1/03
U.S. Cl. 119—17 12 Claims

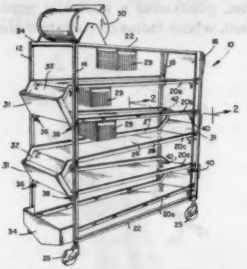
1. An animal cage rack for mounting a plurality of animal cages in horizontal rows, comprising

a support frame having a plurality of spaced, vertically-disposed support members,

a plurality of vertically-spaced shelves adapted to be mounted on said support, frame with a corner of each shelf supported by one of said support members,

and shelf adjusting means mounted on each of said support members and connecting, one corner of at least one of said shelves to the adjacent support, member on which it is mounted,

each of said shelf adjusting means including a movable member engaging and supporting one corner of at least one of said shelves, said member being manually and selectively movable in a vertical direction relative to the adjacent support member, whereby to vary the height of said one corner relative to the other corners of said shelf, without removing said shelf from said support frame,



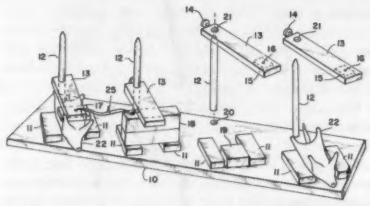
said shelf adjusting means also including locking means for retaining each corner of said shelves immovably on said support members after said shelves have been adjusted.

4,206,721

RETAINER FOR MURINE SPECIMENS AND TEST EQUIPMENT

Roland W. Lee, 107 Chinkapin La., Williamsburg, Va. 23185

Filed Sep. 29, 1978, Ser. No. 946,993
Int. Cl.[2] A61D 3/00
U.S. Cl. 119—103 4 Claims



1. Apparatus for restraining murine specimens and test equipment for laboratory experimentation and the like, comprising:

a base plate;

clamping means attached to said base plate for releasably securing at least one murine specimen to said base plate, said clamping means including a vertically extending pin attached to said plate and a cantilever arm rotatably disposed and vertically movable on said pin and extending horizontally over and parallel to said base plate for securing a specimen to the apparatus;

lock means for fixedly positioning said cantilever arm relative to said base plate and said vertically extending pin;

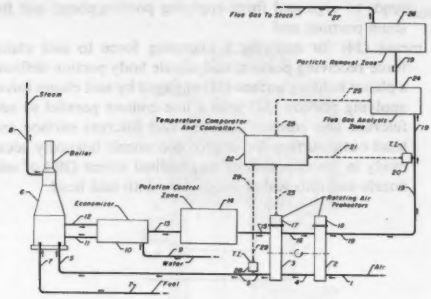
cushioning means for securing said specimen and equipment between said base plate and said clamping means; and,

a pair of rectangular guide blocks mounted on said base plate, said guide blocks being positioned with their respective longest axis on opposite sides of, parallel to, and equidistant from, a line extended radially from said pin, such that said cantilever arm will be above and parallel to said blocks when said arm is rotated into position to restrain a specimen.

4,206,722
HEAT RECOVERY PROCESS FOR FIRED POWER PLANTS

John P. Nolley, Jr., Houston, Tex., assignor to UOP Inc., Des Plaines, Ill.

Filed Oct. 16, 1978, Ser. No. 951,950
Int. Cl.[2] F28F 27/02
U.S. Cl. 122—1 A 6 Claims



1. In a process for the operation of a fired power plant wherein:

(a) an air stream is heated by passage through a first rotating air preheater which is rotated at a substantially constant rate;

(b) the air stream is then passed into a combustion zone wherein a carbonaceous fuel is burned;

(c) a relatively high temperature flue gas stream is removed from the combustion zone;

(d) the flue gas stream is subsequently passed through an economizer wherein it is cooled by indirect heat exchange against water which is to be charged to a boiler;

(e) sulfur oxides are removed from the flue gas stream in a pollution control zone; and,

(f) the flue gas stream is then further cooled by passage through the first rotating air preheater, the improvement which comprises:

i. passing the flue gas stream and the air stream through a second rotating air preheater and effecting the cooling of the flue gas stream and the heating of the air stream, with the second rotating air preheater having a variable rate of rotation;

ii. monitoring an instantaneous temperature of the flue gas stream measured after the flue gas stream has been cooled in the first and the second rotating air preheaters;

iii. generating a temperature difference by comparing the instantaneous temperature of the flue gas stream and a preselected reference temperature; and,

iv. adjusting the rate of rotation of the second rotating air preheater in a manner which decreases said temperature difference.

4,206,723
DOUBLE-FIRED HEATING BOILER

Wolfgang Kunkel, Triesen, Liechtenstein, assignor to Interliz Anstalt, Neugut, Liechtenstein

Continuation of Ser. No. 811,394, Jun. 29, 1977, abandoned. This application Dec. 19, 1978, Ser. No. 970,906
Claims priority, application Fed. Rep. of Germany, Jul. 8, 1976, 2630728
Int. Cl.[2] F22B 31/04
U.S. Cl. 122—22 4 Claims

1. A double-fired heating boiler adapted to be fired selectively by oil, gas or a solid fuel, comprising:

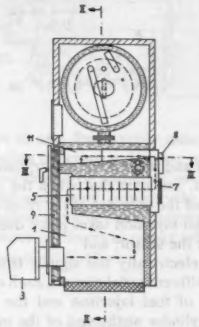
a boiler water chamber;

first and second combustion chambers horizontally spaced from one another within said boiler water chamber and adapted respectively to be oil or gas-fired and solid fuel-fired, said first combustion chamber having a height less than the height of said second combustion chamber, said boiler water chamber having a portion vertically disposed in superimposed relationship over said first combustion chamber and horizontally disposed laterally of the upper portion of said second combustion chamber;

a, collector member for the combustion gases of said first and second combustion chambers;

a first conduit passage having heat exchange surfaces connected to said first combustion chamber and extending through said boiler water chamber and terminating in said common combustion gas collector member;

a second conduit passage having heat exchange surfaces connected to said second combustion chamber and extending through said boiler water chamber and terminating in said common combustion gas collector member;



said first and second conduit passages extending completely separately from said first and second combustion chambers respectively and through said boiler water chamber to said common combustion gas collector member;

said first conduit passage having a horizontal section extending within said boiler water chamber portion, said horizontal section being superimposed over said first combustion chamber and communicating at the front end of said heating boiler with said first combustion chamber and at the rear end of said heating boiler with said collector member, said second conduit passage comprising a horizontally extending section within said boiler water chamber portion superimposed over said first combustion chamber and communicating with said second combustion chamber and lying in superimposed spaced relationship to the horizontal conduit section of said first conduit passage.

4,206,724
AUTOMOBILE FUEL INJECTION CONTROL DEVICE

Hui-tzeng Ting, c/o M. Rosenblatt & Son, Inc., 350 Broadway, New York, N.Y. 10013

Filed Jun. 19, 1978, Ser. No. 916,888
Int. Cl.[2] F02M 51/02
U.S. Cl. 123—32 AE 9 Claims

1. A method of controlling the distribution of fuel inside each cylinder of a spark-ignition internal combustion engine at the end of the intake stroke so as to accomplish the required fuel distribution either when the engine is running under stratified fuel distribution mode at normal load for anti-pollution purpose, or when the engine is running under anti-stratified fuel distribution mode for acceleration purpose, by

(1) locating one electrically operated fuel injector at the stem side of each intake valve of the engine;

(2) providing an injection control drum or disc (ICD) driven synchronously with the cam shaft of the engine;

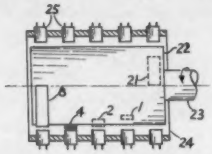
(3) conditioning the surface of the said ICD with multiple

circular tracks of signal bits comprising one heavy load bit (HLB) and multiple normal load bits (NLB);

(4) providing one set of sensors for each fuel injector to pick up each signal from each said signal bit on the ICD. Each set of sensors being fixed on one arm affixed to the engine frame with its position adjustable with respect to the engine frame;

(5) locating the HLB on one track of the ICD such that when the HLB and its relative sensor meet each other, the intake valve of the cylinder of the relative fuel injector is open and fuel injection takes place due to the electrical impulse from the sensor;

(6) locating each of the NLB's on each individual track in consecutive order of time such that only one pair comprising one NLB and its relative sensor, can meet each other at one instant, and such that when the pair do meet, the intake valve of the cylinder of the relative fuel injector is closed and fuel injection takes place due to the electrical impulse from the sensor; and



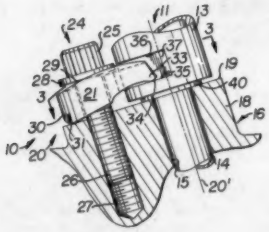
(7) combining electrically the signals from the HLB and NLB's into different serial circuits, each of which controls the duration of fuel injection and the fuel distribution inside each cylinder at the end of the intake stroke such that a stratified fuel distribution mode can be obtained by the combination of different electrical impulses from different NLB's, and an anti-stratified fuel distribution mode can be obtained by the combination of electrical impulses from the HLB and one or more NLB's.

4,206,725

INJECTION NOZZLE CLAMP

Howard D. Jenkel, Washington, and Victor L. Sheldon, Jr., Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 29, 1978, Ser. No. 973,041
Int. Cl.² F02M *39/00*
U.S. Cl. 123—32 R **16 Claims**



1. In an engine structure (12) having a head (16) defining a piston cylinder (17), a planar outer surface (19), a nozzle opening (15) extending through said outer surface and opening into said cylinder, and a fuel injector nozzle (11) having an outer body portion (13) disposed outwardly of said head outer surface and defining a longitudinal extent, said nozzle further having an elongated inner end portion (14) extending longitudinally inwardly from said body portion through said nozzle opening to said cylinder, improved means (10) for retaining the fuel nozzle in said disposition comprising:

a clamp (20) having a segmentally cylindrical fulcrum surface (31) in line contact with said outer surface (19), a force-receiving surface (29), and a force-applying portion (33) defining a segmentally cylindrical force-applying surface (34), said clamp portions being arranged such that a clamping force applied to said force-receiving surface tends to urge said force-applying portion about said fulcrum portion; and

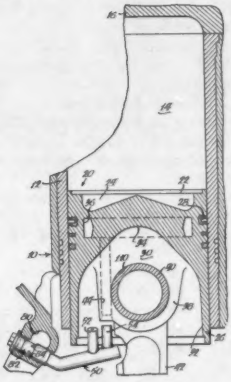
means (24) for applying a clamping force to said clamp force-receiving portion, said nozzle body portion defining a planar holding surface (35) engaged by said clamp force-applying portion (33) with a line contact parallel to said fulcrum line contact between said fulcrum surface and head outer surface for urging said nozzle inwardly accurately in the direction of longitudinal extent (20') of said nozzle and into sealed association with said head.

4,206,726

DOUBLE ORIFICE PISTON COOLING NOZZLE FOR RECIPROCATING ENGINES

John L. Johnson, Jr., Brimfield; Robert M. Vize, Moline, and Noel D. Wiggins, Chillicothe, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jul. 18, 1977, Ser. No. 816,782
Int. Cl.² F01P *3/08*
U.S. Cl. 123—41.35 **6 Claims**



1. A reciprocating engine comprising:

a block having an exterior surface and at least one cylinder therein;

a piston reciprocally received within said cylinder;

a bore extending through said block from said exterior surface and directed toward said cylinder;

an oil gallery in said block and intersecting said bore;

a nozzle having an end received in said bore and having a jet directed toward said cylinder, said nozzle including a passage extending from said jet to said oil gallery; and

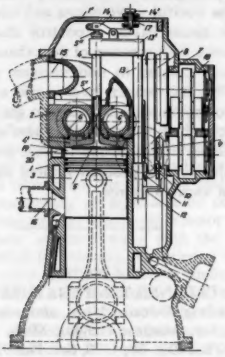
filter means for filtering oil from said gallery comprising ports in said nozzle extending from said passage to said gallery and each having a cross-sectional area less than that of said passage and said jet.

4,206,727

TWO-STROKE-CYCLE ENGINE HAVING AN AUXILIARY PISTON AND VALVE ARRANGEMENT, AND ITS ASSOCIATED DRIVE MECHANISM

Miguel Siegien, De la Serna 979 -Avellane-da-Provincia, Buenos Aires, Argentina

Filed Dec. 11, 1978, Ser. No. 967,982
Claims priority, application Argentina, Dec. 12, 1977, 270337
Int. Cl.[2] F02B *33/04*
U.S. Cl. 123—66 1 Claim



1. A two-stroke-cycle engine comprising at least one cylinder having a cylinder head, a main piston reciprocatingly arranged within each cylinder and associated with the engine crankshaft by means of a main connecting rod, at least one intake valve arranged between the intake manifold and the upper space within said cylinder, an auxiliary piston arranged within said cylinder and having an external hollow stem freely slidably mounted in said cylinder head, said auxiliary piston having at least one transfer port, a transfer valve having an internal stem freely slidably mounted within said external hollow stem, the free end of said internal stem protruding beyond the free end of said external stem, said transfer valve being capable, with respect to said auxiliary piston, of adopting two positions, in the first of which is closes said transfer ports and in the second of which it opens them, driving means capable of driving said external stem in a predeterminately variable synchronizing relationship with the crankshaft rotation and comprising a crank and auxiliary connecting rod mechanism, means capable of driving said transfer valve to said first position when the assembly of both said stems reaches the top bottom center, a spark plug arranged in the upper portion of the cylinder, and an exhaust port provided in the side wall of the cylinder at a point thereof slightly above the position of the upper edge of the main piston when this later is in the bottom dead center of its stroke.

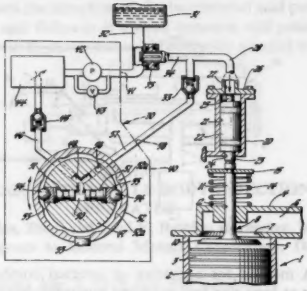
4,206,728

HYDRAULIC VALVE ACTUATOR SYSTEM

Myron U. Trenne, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 1, 1978, Ser. No. 901,452
Int. Cl.[2] F04B *3/00*
U.S. Cl. 123—90.12 3 Claims

1. A hydraulic valve actuator system for controlling the opening and closing of a set of valves associated with the cylinders of an internal combustion engine wherein the valves are normally closed by springs, said system including a set of actuator cylinders each with an actuator piston slidable therein for engagement with one of said valves to effect movement of said one of said valves when said actuator piston is reciprocated in a first direction, fluid delivery means for delivering fluid to said actuator cylinders to the end of said actuator pistons opposite said valves, said fluid delivery means including a low pressure fluid supply means, an engine driven high pressure, metering pump means having an inlet connected to said fluid supply means and a set of outlets and separate supply conduit means connecting said outlets to said actuator cylinders, and a set of normally open, solenoid valve controlled drain conduit means operatively connecting each of said supply conduit means to said fluid supply means, said metering pump means including metering and timing means for controlling the output and timing of output of said metering pump means to control lift and timing, respectively, of the lift of said valves, each said solenoid valve being operatively connectable to a controlled source of electrical power whereby to control duration of opening of said valves.

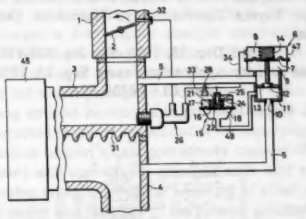


4,206,729

EXHAUST GAS RECIRCULATION SYSTEM

Noriaki Kawai, Okazaki, and Heisuke Yamamoto, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Feb. 24, 1978, Ser. No. 881,048
Claims priority, application Japan, Sep. 9, 1977, 52-107712
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A 5 Claims



1. An exhaust gas recirculation system in combination with an internal combustion engine having an intake mixture system and an exhaust manifold, the exhaust gas recirculation system comprising:

an intake manifold having a riser portion for heating an intake mixture charge;

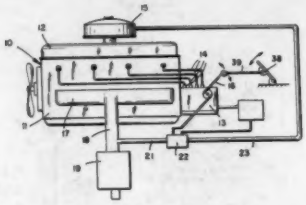
an exhaust gas recirculation passage running from the exhaust manifold to the intake manifold for introducing part of exhaust gases from the former to the latter; and

a temperature-responsive valve in said intake manifold directly responsive to the temperature of said riser portion for controlling the flow rate of exhaust gases from said exhaust manifold through said exhaust gas recirculation passage into said intake manifold in accordance with the temperature of said riser portion.

4,206,730
METHOD FOR RECYCLING EXHAUST GAS FROM AN INTERNAL COMBUSTION ENGINE

John M. Cobb, Cold Spring, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Sep. 22, 1978, Ser. No. 944,943
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A 8 Claims



1. A method for operating an internal combustion engine having at least one fuel injection pump for injecting fuel into the engine's combustion chamber, and having an intake manifold for introducing air to said combustion chamber, and into which combustion chamber a stream of exhaust gas is recycled from the engine's exhaust manifold, which method comprises the steps of;

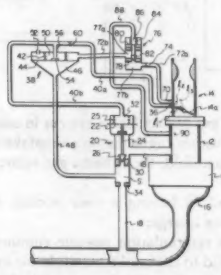
providing an exhaust gas recycle circuit which communicates said exhaust manifold with the intake manifold, said recycle circuit including a first flow control means having an adjustable flow passage through which said stream of exhaust gas flows, and said first flow control means having a signal responsive actuator operably connected therewith to adjust said flow passage, and

actuating said first flow control means actuator, whereby to adjust the flow passage of said first flow control means in response to the rate of fuel input, and to the speed output of said engine.

4,206,731
EXHAUST GAS RECIRCULATION FOR AN INTERNAL COMBUSTION ENGINE

Yasushi Sato, and Hidemi Onaka, both of Susono, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Dec. 13, 1978, Ser. No. 968,916
Claims priority, application Japan, Sep. 13, 1978, 53/111735
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A 5 Claims



1. As exhaust gas recirculation system of an internal combustion engine having an engine body, an intake device connected to said engine body, a throttle valve arranged in said intake device, and an exhaust device connected to said engine body, said system comprising:

passageway means connecting said exhaust device with said intake device for recirculating a part of exhaust gas from said exhaust device to said intake device;

flow control valve means arranged in said passageway means and having vacuum actuator means for controlling the opening of said valve means;

vacuum conduit means connecting a first vacuum source formed in said intake device at a position slightly upstream of said throttle valve in its idle condition;

means for forming a space of a predetermined small volume in said passageway means at a position located between said flow control valve means and said exhaust device;

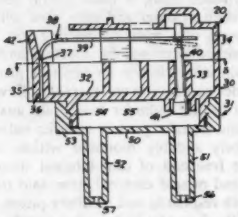
modulator means having a control chamber which is, in accordance with pressure of the exhaust gas in said space, selectively opened to said vacuum conduit means for controlling the vacuum level in said actuator means; and

vacuum control means responsive to the load of said engine for selectively introducing a vacuum signal into said control chamber from a second vacuum source formed in said intake device at a position located slightly upstream of said first vacuum source.

4,206,732
AIR CLEANER TEMPERATURE SENSOR

George C. Ludwig, Owosso, Mich., assignor to Tom McGuane Industries, Inc., Madison Heights, Mich.

Filed Oct. 30, 1978, Ser. No. 955,976
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D 16 Claims



1. An air cleaner temperature sensor for use in a system for sensing the temperature of the air in an air cleaner and modulating the temperature of the air entering the air cleaner in response to the temperature in the air cleaner comprising

a plastic body having an inlet adapted to be connected to a vacuum source and an outlet through which the vacuum can be connected to a motor for controlling the flow of air to the air cleaner,

said body including an opening to the ambient air surrounding the body,

a valve in said opening,

a bimetallic element supported by said body and operable to control said valve element such that the flow of air through said ambient air inlet is controlled by said bimetallic element,

said bimetallic element being generally L-shaped, said body having a slot therein into which one end of said element extends and is frictionally held,

the other end of said bimetallic element engaging said valve member,

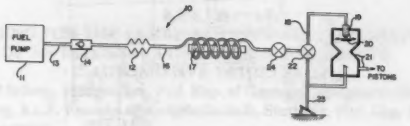
a cover,

an integral plastic hinge connecting said cover to said body,

said cover having an integral wall connected thereto and extending along the side wall of said body,

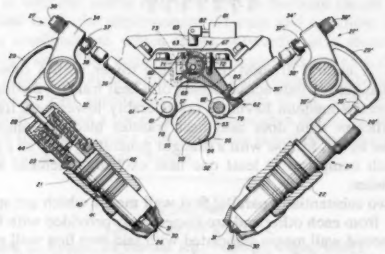
and interengaging mechanical means between said cover and a peripheral wall of said body for locking said cover in position.

4,206,733
FUEL GASIFYING SYSTEM
Randy K. Gregory, 701 W. 49th Ave., Gary, Ind. 46408
Filed Apr. 6, 1978, Ser. No. 894,165
Int. Cl.[2] F02M *31/00, 17/18*
U.S. Cl. 123—133 4 Claims



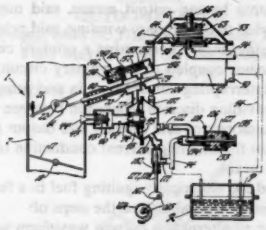
1. In a fuel gasifying system for a piston type internal combustion engine, said fuel gasifying system including means for providing a liquid source of fuel under substantially constant pressure, tube means connected to said fuel source, heating means adjacent said tube means for gasifying said liquid fuel, the improvement comprising an injector tube connected to said tube means, a canister into which said injector tube axially projects, said canister communicating with the pistons for distributing the gasified fuel therein, said injector tube having an orifice through which said gasified fuel is axially introduced into said canister, and a deflecter having a surface disposed substantially normal to the longitudinal axis of said injector tube whereby said gasified fuel impinges thereagainst and is radially outwardly deflected into said canister and thereby effectively dispersed and thoroughly mixed with air in the proper gas to air ratio for combustion in the piston chambers.

4,206,734
ADJUSTABLE TIMING MECHANISM FOR FUEL INJECTION SYSTEM
Julius P. Perr, and Andrew C. Rosselli, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.
Filed Dec. 27, 1977, Ser. No. 864,813
Int. Cl.[2] F02M *39/00*
U.S. Cl. 123—139 AP 9 Claims



1. In an internal combustion engine including at least one injector of the type that includes a cup and a plunger that engages the cup at the end of an injection stroke of the plunger during an injection cycle, a rocker arm mounted for pivotal movement and connected to actuate the injector, a rod having one end connected to pivot the rocker arm and extending toward a cam, the improvement comprising a cam follower contacting said cam and connected to the other end of said rod, said rod being tiltable on said one end thereof, and movable eccentric means for pivotably mounting said cam follower and angularly moving said follower relative to said cam and moving said other end of said rod so that at a time in an injection cycle, as for example when said plunger engages said cup, said other end of said rod moves on an arc that has as its center said one end of said rod said cam follower being angularly movable to a full advance position, to a full retard position and to positions therebetween, the point of contact of said follower with said cam being closely adjacent a line drawn from the center of said cam to said one end of said rod when said follower is in one of said positions, and said point of contact being displaced from said line and away from said other end when said follower is in the other of said positions, and said eccentric means mounts said cam follower for pivotal movement on a pivot axis, said other end of said rod, said point of contact and said pivot axis being spaced and forming points of a triangle, and said eccentric means displaces said pivot axis in a direction which is opposite the direction of displacement of said point of contact when said follower is moved between said positions, said directions of displacement being generally parallel to said line.

4,206,735
MECHANICAL THROTTLE BODY INJECTION APPARATUS
Donald L. Miles, Troy, and Paul E. Reinke, Rochester, both of Mich., assignors to General Motors Corporation, Detroit, Mich.
Filed Aug. 4, 1978, Ser. No. 931,157
Int. Cl.[2] F02M *39/00*
U.S. Cl. 123—139 AW 11 Claims



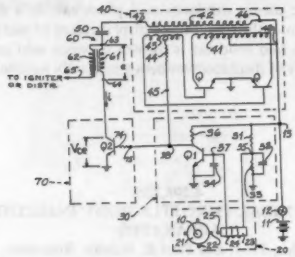
1. A pressure carburetor for an internal combustion engine with an intake manifold, said carburetor including housing means having at least one induction passage therethrough to supply a combustible mixture to the intake manifold of the engine, an air valve means and a spaced apart throttle valve means pivotally mounted for controlling flow through said induction passage; a fuel supply conduit connectable to a source of fuel under pressure; a fuel injection nozzle in said housing means having a spray outlet positioned to discharge fuel into said induction passage; a fuel metering valve in said housing having an inlet connected to said fuel supply conduit, a movable metering member and an outlet for supplying fuel to said fuel injection nozzle; a cam operatively connected to said air valve means and operatively engaged with said movable metering member whereby to effect metering of a fuel quantity through said outlet as a function of the pivotal position of said air valve; a pressure regulator valve in said housing means providing a first chamber separated by a movable wall means from a second chamber, said first chamber being connected to said outlet and having a flow outlet to said injection nozzle with flow through said flow outlet controlled by said movable wall means; a conduit means with a metering orifice therein connecting said second chamber to said fuel supply conduit, a drain conduit means with a flow orifice therein in said housing means connected to said second chamber and connectable to a fuel reservoir for fuel at substantially atmospheric pressure; and, a pulse width modulated solenoid valve operatively associated with said drain conduit means for controlling drainage fuel flow therethrough from said second chamber; whereby said pressure regulator valve is operative to control the pressure drop across said fuel metering valve as a function of engine operation.

4,206,736

HIGH POWER AC IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Nov. 15, 1978, Ser. No. 960,871
Int. Cl.[2] F02P 1/00; H05B 37/02
U.S. Cl. 123—148 E 23 Claims



1. An ignition system including an ignition transformer having a primary winding, said system imposing AC energy as an excitation function upon the primary winding, comprising the combination of:

a power source having output means, said output means being coupled to the primary winding, said primary winding and output means comprising a primary circuit; and

switching means, coupled to the primary circuit, for intermittently interrupting current flow in said primary circuit and for providing discrete separation between successive output waveforms of said system, said output means also being means for enabling current conduction through the switching means.

21. A method for electrically igniting fuel in a fuel burning engine, comprising in combination the steps of:

(a) generating an alternating current waveform which has a plural number of excursions for each igniter firing;

(b) arming an electronic switch by means of said waveform;

(c) passing said alternating current through a primary winding of a transformer, through a capacitor and through said electronic switch; and

(d) inhibiting generation of said alternating current and interrupting energy transfer to said primary winding during time intervals between each said igniter firing.

4,206,737

MODULATED IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Continuation-in-part of Ser. No. 812,919, Jul. 5, 1977, Pat. No. 4,128,811, Ser. No. 814,206, Jul. 11, 1977, Pat. No. 4,140,947, Ser. No. 814,457, Jul. 11, 1977, Pat. No. 4,139,804, Ser. No. 816,714, Jul. 18, 1977, Pat. No. 4,144,476, Ser. No. 868,118, Jan. 9, 1978, Pat. No. 4,168,692, Ser. No. 878,792, Feb. 17, 1978, Pat. No. 4,169,445, and Ser. No. 913,437, Jun. 7, 1978. This application Dec. 13, 1978, Ser. No. 969,075
Int. Cl.[2] F02P 1/00
U.S. Cl. 123—148 E 21 Claims

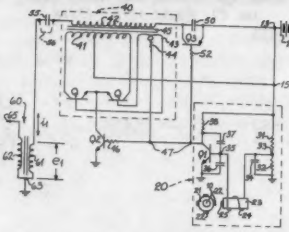
1. An ignition system comprising the combination of:

a power source having output means for providing alternating current;

a DC source connected to and intermittently feeding said power source;

a capacitor connected between said output means and DC source; and

first switching means, in parallel with said capacitor, for charging said output means during a first mode of operation and for discharging said output means during a second mode of operation of the system.

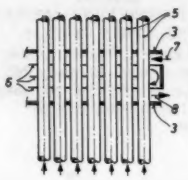


4,206,738

HEAT EXCHANGER

Hermann Heeren, Nüremberg, and Liselotte Kraetschmer, Hanover, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Augsburg-Nürnberg Aktiengesellschaft, Nüremberg, Fed. Rep. of Germany

Filed Mar. 23, 1977, Ser. No. 780,280
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1976, 2612158; Feb. 25, 1977, 2708162; Feb. 25, 1977, 2708163
Int. Cl.[2] F28F 3/08; F28D 1/06
U.S. Cl. 165—148 9 Claims



1. A natural draught dry cooling tower with a tube heat exchanger for indirect recooling of a heat transfer medium by a gaseous medium having a considerably lower heat transfer coefficient than does said heat transfer medium, especially water by air, for use with a draught generating shell of a plant, which comprises at least one heat exchange element which includes:

two substantially parallel first wall means which are spaced from each other and are respectively provided with holes;

second wall means associated with said two first wall means so as to define a heat exchange region with said two first wall means;

inlet and outlet means for conveying said heat transfer medium into and out of said heat exchange region respectively; and

tube means with maximum transfer surfacing sealingly extending through the respective holes of said two first wall means for conveying gaseous medium through said tube means which are free of any ribs to avoid pressure loss in the natural draught dry cooling tower, the design thereof being governed by the equation

$$k_A = 382 \cdot L^{0.48} \cdot [(H \cdot (\frac{\gamma 1 - \gamma 2}{0.1}))]^{0.53},$$

in which L designates the length of said tube means individually in meters, H the height of said tower shell in meters γ_1 the specific gravity of said gaseous medium

directly before the inlet into said heat exchanger in kg/m^3 (kilograms per cubic meter, γ_2 the specific gravity of said gaseous medium at the level of the top of said tower shell in kg/m^3, and k_A the specific heat transfer rate in W/m^2K (Watts per square meter area of attack and degrees Kelvin).

4,206,739

CASING FOR THE LUBRICATION OF THE CAMSHAFT OF AN INTERNAL COMBUSTION ENGINE FOR AUTOMOTIVE VEHICLES

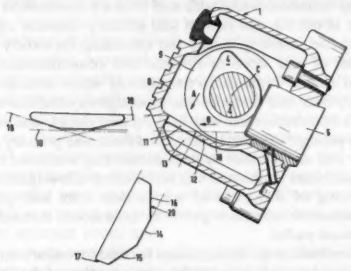
Rolf Schrag, Hemmingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Aug. 23, 1978, Ser. No. 936,131

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1977, 2737901

Int. Cl.² F01M *77/00, 9/10*

U.S. Cl. 123—196 R **3 Claims**



1. In a casing for the lubrication of a camshaft of an internal combustion engine for automotive vehicles of the V-type having a top-positioned camshaft construction, said casing being filled partially with lubricating oil to effect splash lubrication of cams carried by said camshaft and being provided with at least one lateral overflow port to maintain the oil at a constant level, the improvement wherein said overflow port has a configuration which flares outwardly in a direction toward a side of the casing facing the camshaft and extends at least approximately in parallel to the longitudinal camshaft and extends at least approximately in parallel to the longitudinal camshaft axis, and a trapezoidal configuration flaring toward a side of the casing facing away from the camshaft and merging into a cylindrical configuration.

4,206,740

CROSS BOW PISTOL

Edward B. Lydon, 22 Garnet Rd., Nichols, Conn. 06611

Filed Nov. 2, 1978, Ser. No. 957,190

Int. Cl.² F41B *5/00*

U.S. Cl. 124—25 **10 Claims**

1. A release mechanism for a cross bow having a stock, bow and bow string, and further comprising:

A. a release wheel pivotably secured in the stock with the wheel plane in the direction of arrow flight,

1. said wheel having a plurality of pairs of notches positioned successively around the periphery of the wheel, and

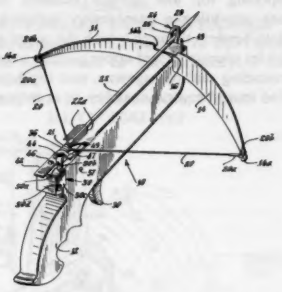
a. the forward most notch of each pair being a bow string notch adapted to receive the bow string,

b. and the rearward notch of each pair being a sear notch adapted to engage a trigger sear;

B. a trigger pivotably mounted with one end biased toward said release wheel,

a. and having a sear positioned on the end biased toward said release wheel,

b. said trigger and sear being adapted to engage only the sear notch of a notch pair inside said stock; and



C. a pivotable safety for preventing the wheel from rotating when in a cocked position, said means having a means or engaging and disengaging one of said sear notches at a position near the top of the stock.

4,206,741

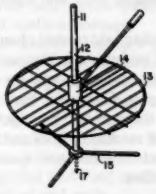
OUTDOOR GRILL

James D. Prigge, 8436 N. 37th Ave., Phoenix, Ariz. 85021

Filed May 8, 1978, Ser. No. 903,943

Int. Cl.² F24B *3/00*

U.S. Cl. 126—25 A **8 Claims**



1. An outdoor grill comprising a column having support members in the form of outwardly extending teeth spaced periodically along said column, a grid having a hub member at its center, which hub member encircles said column and is adapted to engage said support members to secure said grill at selectable points along the length of the column, and a tripod support base engaging a lower portion of said column, a pointed extension of said column extending therethrough for insertion into the ground.

4,206,742

HEAT EXTRACTOR AND SHIELD FOR ROOM STOVES AND THE LIKE

Albert V. Johnson, R.R. 1, Box 87, Erhard, Minn. 56534

Filed May 17, 1978, Ser. No. 906,831

Int. Cl.² F24B *3/00*; F28F *13/00*; E04F *17/04*

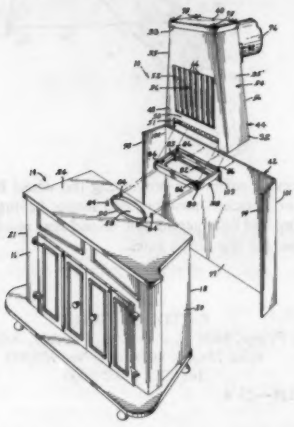
U.S. Cl. 126—66 **3 Claims**

1. Apparatus for recovering heat from the waste gases of a stove having a back, a pair of sides and a top including a waste gas exit port while shielding structures near the stove from heat radiating from the back and sides of the stove, comprising:

a central chamber having a bottom end and a top end and including a lower partially closed heat exchange portion, having an inlet and an outlet for air to be heated, a waste gas entrance portion or inlet plenum at said bottom end of said central chamber, and an upper waste gas discharge portion, at said top end, having a waste gas discharge port

from which the waste gases exit from said central chamber;

an inner core positioned within said lower portion, said core comprising top and bottom headers, and connecting means providing a passageway between said top and bottom headers through which the waste gases pass from said inlet plenum to said upper portion so as to heat the air surrounding said passageway, said top header being connected to said central chamber so as to prevent the waste



gases from passing from said upper portion to said lower portion;

means for mounting said central chamber and said inner core on the top of said stove so that said inlet plenum receives the waste gases from the waste gas exit port and so that the waste gases pass from said inlet plenum to said upper portion only through said passageway;

and a heat shield extending from and below said bottom end of said central chamber and spaced from the back and sides of the stove.

4,206,743

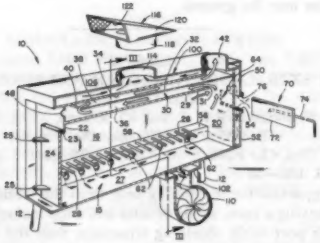
HEATING APPARATUS

W. Wally Niemela, Box 165E, Chassell, Mich. 49916

Filed May 20, 1977, Ser. No. 798,989

Int. Cl.[2] F24H 3/06

U.S. Cl. 126—110 B **24 Claims**



1. A heating stove or furnace comprising:

a combustion enclosure having a primary combustion chamber for burning fuel and a secondary combustion area in fluid communication with said primary combustion chamber for receiving and further combusting the gases of combustion from said primary combustion chamber;

an air heating enclosure at least partially surrounding said combustion enclosure for passing ambient air for heating;

combustion air intake means for controlled admission of fresh, ambient air to said primary combustion chamber and said secondary combustion area, said combustion air intake means including means for preheating said fresh, ambient air prior to admission to said combustion chamber and area;

an exhaust outlet at the rear of said stove or furnace for exhausting the products of combustion after passage through said secondary combustion area;

ambient air intake means for admitting ambient air to said air heating enclosure;

a heated air outlet for exhausting heated air from said air heating enclosure;

means for inserting fuel in said primary combustion chamber;

said secondary combustion area including first and second generally horizontally extending, secondary combustion passageways located vertically above said primary combustion chamber, said first secondary combustion passageway communicating with said primary combustion chamber at the top and rear of said primary chamber opposite said fuel inserting means and extending forwardly to the front of said stove or furnace into communication with said second combustion passageway which extends vertically over said first secondary passageway and rearwardly into communication with said exhaust outlet, said secondary passageways being separated from said primary chamber and one another by heat-conducting walls and having a combined length and size sufficient to allow ignition and burning of the gases of combustion from said primary combustion chamber prior to exhaustion through said exhaust outlet;

said combustion air intake means for said secondary combustion area including an intake opening adjacent the junction between said primary combustion chamber and said first secondary combustion passageway to facilitate secondary combustion of said gases in said secondary passageways.

4,206,744

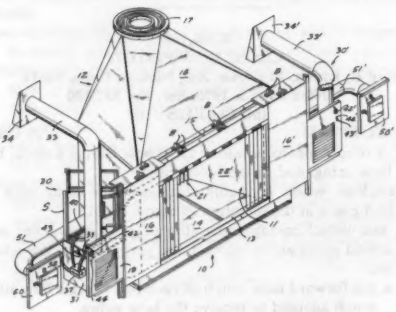
AIR CONTROL ASSEMBLY FOR HEAT CIRCULATING FIREPLACE

Kenneth L. Mahoney, Fort Wayne, Ind., and David A. Johnson, Hayward, Calif., assignors to American Standard Inc., New York, N.Y.

Filed Dec. 2, 1977, Ser. No. 856,712

Int. Cl.[2] F24B 7/00

U.S. Cl. 126—121 **4 Claims**



1. In an air control assembly for a heat circulating fireplace of the type having an insert module provided with an air inlet opening and a heated air discharge opening, is mounted in the combustion chamber of the fireplace, said insert module including a heat exchanger defining the front vertical wall of said

insert module which is positioned adjacent the rear wall of the combustion chamber, said air control assembly arranged and constructed to control the temperature of air to be heated that is delivered to said insert module and the temperature of the heated air that is discharged therefrom into the fireplace room and/or an adjacent room, said air control assembly comprising:

a blower box module including a housing having an air inlet mixing chamber and a heated air discharge chamber;

said air inlet mixing chamber having a room air inlet opening and an outside air inlet opening for mixing room air and/or outside air therein;

said heated air discharge chamber having a heated air inlet opening communicating with the heated air outlet opening of said insert module and a heated air outlet opening for discharging heated air into the fireplace room and/or an adjacent room;

said heated air discharge chamber having a temperature control means mounted therein and being in fluid communication with heated air being discharged through said chamber;

a damper assembly is operably mounted on said blower box module and being positioned in said air inlet mixing chamber for proportioning the amount of room air and/or outside air entering said air inlet chamber;

a fan assembly mounted on said blower box housing and having an air inlet opening communicating with the air inlet mixing chamber and an air discharge opening communicating with the air inlet opening of said inert module;

said fan assembly including a fan electrically connected to said temperature control means mounted in said air discharge chamber so that air discharged through the heated air outlet opening of said air discharge chamber is delivered at a preset temperature into the fireplace room and/or adjacent room; and

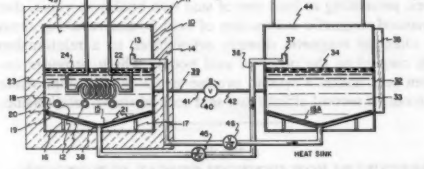
said damper assembly including a damper blade hingedly mounted in said air inlet mixing chamber and being shiftable to cover and uncover said outside air inlet opening to proportion the volume of outside air and inside air entering said air inlet mixing chamber.

4,206,745

SOLAR OPERATED CHEMICAL HEAT PUMP

James K. Gilgen, 979 Montgomery Dr., Sandy, Utah 84070

Filed Jul. 19, 1978, Ser. No. 925,994
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271.1 **11 Claims**



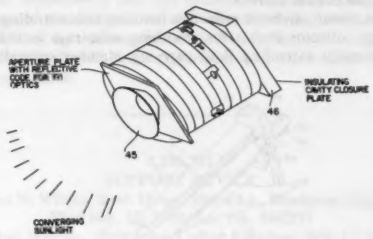
1. A chemical heat pump system including, in combination: a first, insulated tank containing a water-ammonia solution; a second tank containing a water-ammonia solution; first conduit means coupled between said tanks for conducting the vapor phase in said first tank into the solution of said second tank; second conduit means for conducting the vapor phase in said second tank into the solution of said first tank; external means coupled to said first tank for heating said solution therein; heat-extraction means proximate said first tank and in heat-exchange relationship therewith for withdrawing sensible heat therefrom; and compensating means for adjusting water level in said tanks.

4,206,746

SPIRAL-PASSAGE HEAT EXCHANGER

Talbot A. Chubb, Arlington, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 10, 1978, Ser. No. 876,447
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—438 **4 Claims**



1. A chemical converter-heat exchanger comprising:

a plurality of coils assembled side-by-side along the same axis,

each of said coils comprising a spiral including a plurality of loops,

each loop of said spiral including at least one fluid inflow passage and at least one fluid outflow passage and having a common wall with said inflow passage diametrically inward of said fluid outflow passage;

inlet means and outlet means forming a separate inlet and outlet end at the exterior end of said coils near the exterior end of said inflow passage and said outflow passage for admitting fluid into said inflow passage and allowing fluid to exit from said fluid outflow passage;

means preventing intermixing of inflow fluid with outflow fluid at said separate inlet and outlet ends of each of said fluid inflow passage and said fluid outflow passage at the exterior end of each of said coils;

an inlet-outlet end connector at the interior end of said fluid inflow passage and said fluid outflow passage of each of said coils to switch fluid from said inflow passage to said fluid outflow passage of each of said coils;

a conical solar energy reflector arranged to receive solar radiation into the area confined by said plurality of coils when the coil assembly in mounted at the focus of a focusing sunlight reflector; and

a backing plate which prevent heat from escaping from the confined area of said coils,

whereby inflowing fluid will be heated by sunlight focused into the area confined by said assembled coil and inflowing fluid will be heated in each loop of said coil configuration by the outflowing fluid.

4,206,747

SOLAR ENERGY COLLECTOR

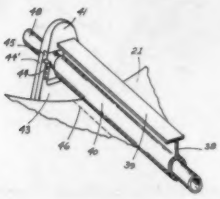
William P. Niedermeyer, 1024 Mt. Mary Dr., Green Bay, Wis. 54304

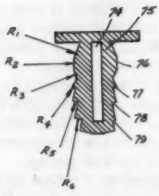
Filed Oct. 25, 1977, Ser. No. 844,924
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—438 **2 Claims**

1. A linear parabolic reflective focusing concentrating solar energy collector device for absorbing solar rays including a horizontally extending fluid carrying member centrally located in a vertical plane coincident with the apex of the parabolic reflector surface, said fluid carrying member being spaced above the apex and above the zeniths of said reflective

surface, at least one absorption surface operatively connected to said fluid carrying member and extending to at least the ends of said reflective surface parallel to the fluid carrying member, said fluid carrying member and absorption surface arranged to absorb direct solar rays, linear focused rays, and diffused reflected solar rays, said fluid carrying member being rectangular with its major dimension parallel to the direction of incoming solar rays, a plurality of surfaces being arranged at selective angles and symmetrical with respect to a central plane coincident with the focal line and the apex of the reflector surface, said angled surfaces being at least in part parallel to the axis of the fluid carrying member, each of said surfaces being arranged perpendicularly to the direction of solar rays impinging on a line central thereto.

2. A linear parabolic reflective focusing concentrating solar energy collector device for absorbing solar rays including a horizontally extending fluid carrying member centrally lo-





cated in a vertical plane coincident with the apex of the parabolic reflector surface, said fluid carrying member being spaced above the apex and above the zeniths of said reflective surface, at least one absorption surface operatively connected to said fluid carrying member and extending to at least the ends of said reflective surface parallel to the fluid carrying member, said fluid carrying member and absorption surface arranged to absorb direct solar rays, linear focused rays, and diffused reflected solar rays, said linear parabolic reflecting surface being supported from, and arranged for rotation about, a fluid carrying member located concentrically about a focal line, said supports being fixedly attached to the centrally located fluid carrying member, said member mounted for rotation within journals mounted externally of, and in close proximity to, said supports, said supporting members including adjustment means for changing the focal distance between the reflector surface and said fluid carrying member.

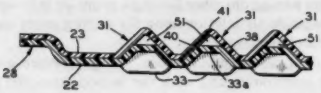
4,206,748

SOLAR ENERGY COLLECTOR WITH COLLAPSIBLE SUPPORTING STRUCTURE

Ronald D. Goodman, Sylvania; Wallace F. Krueger, Toledo, and Anthony R. Shaw, Waterville, all of Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed May 25, 1978, Ser. No. 909,204
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—444 **15 Claims**

1. A solar energy collector comprising a body formed of plastic material in a one-piece unitary construction having an inlet manifold and an outlet manifold at the opposite ends thereof, and a multiplicity of elongated parallel flow passages in laterally spaced relation extending between and connecting said manifolds, each of said passages defined by a bottom wall and an exposed top wall surface having angularly related sloping wall portions extending in a diverging relation from a common apex juncture for presenting a maximum exposed surface to solar rays, and an inlet restriction adjacent at least



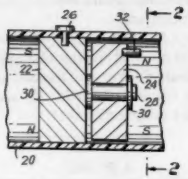
one end of each passage said restriction defined by the top wall portions and a limited section of the bottom wall, said bottom wall section displaced upwardly into closer proximity to the top wall apex than the position of the bottom wall along the remaining elongated flow passage, said displaced bottom wall extending into said flow passage and thereby reducing the cross sectional area of said passage.

4,206,749

CONTROL SYSTEMS AND METHODS UTILIZING MAGNETICALLY RETENTIVE BODIES

Louis Bucalo, 155 Roberts St., Holbrook, N.Y. 11741

Filed Jun. 7, 1978, Ser. No. 913,329
Int. Cl.[2] A61B *19/00*
U.S. Cl. 128—1 R **32 Claims**



1. In a control method, the steps of providing between at least two suitably supported magnetically retentive bodies, each of which has a given magnetic domain orientation, a first precise stable relationship resulting from natural magnetic interaction of said bodies which relationship is stable under the influence of random disturbances, while achieving a first effect from said first stable relationship, then changing the magnetic domains of at least one of said magnetic orientations by a sufficient force which is greater than that of random disturbances, permitting at least one of said two bodies to move, due to natural magnetic interaction of said bodies resulting from the changed magnetic domain orientation, to a relationship with respect to the other of said bodies which provides between said bodies a second precise stable relationship, while achieving a second effect from said second stable relationship.

4,206,750

SPECULUM FOR GYNECOLOGICAL ENDOSCOPY EXAMINATION

Seppo Kaivola, Linnanherrantie 3 B, 00950 Helsinki 95, Finland

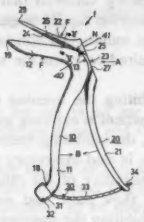
Filed Sep. 15, 1978, Ser. No. 943,559
Claims priority, application Finland, Dec. 15, 1977, 773800
Int. Cl.[2] A61B *1/32*
U.S. Cl. 128—17 **9 Claims**

1. Speculum apparatus for use in connection with gynecological endoscopy examination comprising:

a first substantially L-shaped inner member defined by an elongate first handle portion, a first dilating portion ex-

tending angularly with respect to said first handle portion, and a first connecting portion integrally interconnecting said first handle and dilating portion, at least said first connecting and dilating portions having transverse channel shaped cross-sections defining on at least said first connecting portion a pair of wall portions having curved terminal edges outwardly extending from said first connecting portion;

a second substantially L-shaped outer member defined by an elongate second handle portion, a second dilating portion extending angularly with respect to said second handle portion, and a second connecting portion integrally interconnecting said second handle and dilating portions, said second dilating portion having a pair of outwardly extending shoulders; and



said second connecting portion of said outer member being received within the channel shaped interior of said first connecting portion with each of the pair of terminal edges of said first connecting portion matingly engaging respective ones of the pair of shoulders defined on said second dilating portion, the points of engagement defining a pivot axis between said inner and outer members which is displaceable rearwardly with respect to the free ends of said first and second dilating portions when said first and second handle portions are urged towards each other, whereby said inner and outer members are detachably pivotally interconnected without a separate pivot pin or the like.

4,206,751

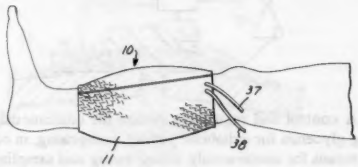
INTERMITTENT COMPRESSION DEVICE

John F. Schneider, Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 31, 1978, Ser. No. 892,309

Int. Cl.² A61H 1/00

U.S. Cl. 128—24 R **6 Claims**



1. A device adapted to contact the skin surface of the mammalian limb and to apply compressive pressures to the mammalian limb from a source of pressurized fluid comprising:

(a) a compliant bladder having a skin contacting surface, said bladder being comprised of a first wall, a second wall and a semipermeable third wall being positionable adjacent the skin, said first wall being spaced with respect to the skin parallel to said third wall with said second wall interposed between and affixed to said first and third walls so that said first and second walls form a first chamber and said second and third walls form a second chamber which extends over substantially the entire surface of said second wall, said first chamber being fluid impervious and expandable when subjected to a fluid pressure, said second chamber being pressurizable whereby upon pressurization said third wall allows a nearly continuous ventilating flow of fluid to be passed through substantially the entire third wall through to said skin surface;

(b) a means for connecting the first chamber and the second chamber of said bladder to the source of pressurized fluid;

(c) a retaining means for affixing said bladder to the mammalian limb such that said third wall emitting the ventilating flow from said second chamber is in contact with the limb and expansion of said first chamber, resulting from pressure of the fluid within said first chamber, is essentially directed to the mammalian limb, whereby the retaining means and said bladder tightens around the encased mammalian limb.

4,206,752

SUPPORT DEVICE

Norman N. Witton, Bank House, Shard La., Blackpool, England

Filed Sep. 18, 1978, Ser. No. 943,337

Claims priority, application United Kingdom, Sep. 17, 1977, 38868/77

Int. Cl.² A61F 5/00

U.S. Cl. 128—79 **6 Claims**

1. A support device comprising a support element adapted to fit alongside the penis with the penis directed upwardly, an arcuate part-cylindrical shell, said shell having a plurality of axially directed slots defined therein, an axially directed extension of arcuate transverse and rectangular longitudinal section on said shell, said extension having a length which is approximately equal to the axial extent of said shell, said extension having a roughened external surface, and connection means received in said slots for linking the support element to the user's body whereby in use the penis is supported against movement away from the said upwardly directed disposition of same.

4,206,753

METHOD AND APPARATUS FOR MIXING GASES

William P. Fife, 3616 Sunnybrook La., Bryan, Tex. 77801

Filed Nov. 16, 1977, Ser. No. 852,056

Int. Cl.² A62B 7/00

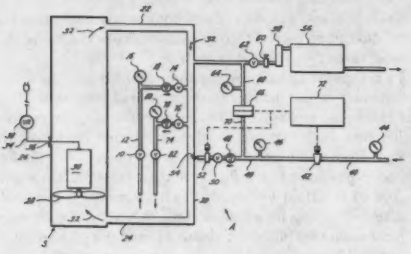
U.S. Cl. 128—201.21 **10 Claims**

9. An apparatus for forming precise and regulated mixture percentages of oxygen in a breathing gas, comprising:

(a) means for supplying a stream of hydrogen carrier gas;

(b) means for injecting the oxygen into the hydrogen carrier gas at a flow rate substantially lower than the flow rate of the stream of carrier gas to form the breathing gas, and with the percentage of oxygen in the hydrogen carrier gas being five percent or less;

(c) conduit means for circulating the stream of hydrogen carrier gas and injected oxygen as they are mixed; and



(d) means in said conduit means for continuously circulating the mixed gases passed through said conduit means to thoroughly mix same thereby forming the breathing gas.

4,206,754

LUNG VENTILATORS

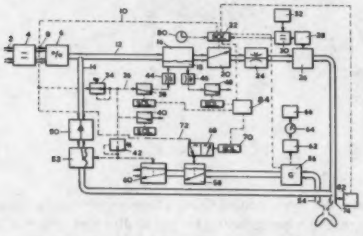
Lawrence A. Cox, Epping, and John D. Smethers, Wormley, both of England, assignors to BOC Limited, London, England

Filed May 24, 1977, Ser. No. 799,985

Claims priority, application United Kingdom, Jun. 2, 1976, 22706/76

Int. Cl.[2] A61M *16/00*

U.S. Cl. 128—204.21 **2 Claims**



1. A volume-cycled lung ventilator providing for both spontaneous breathing of a patient connected thereto and intermittent mandatory ventilation, the ventilator comprising:

means defining a first inspiratory flow path and means connecting such flow path at its inlet end to a source of pressurized respirable gas;

means defining a second inspiratory flow path and means connecting such flow path at its inlet end to the source of respirable gas;

means defining an expiratory flow path connected at its outlet end to atmosphere;

patient connection means for supplying respirable gas from the outlet ends of said first and second inspiratory flow paths to a patient, and for supplying gas expired by the patient to the inlet end of said expiratory flow path;

a normally-closed inspiratory flow valve in said first inspiratory flow path and a normally-open expiratory flow valve in said expiratory flow path;

means for operating said inspiratory and expiratory flow valves in synchronization at preselectable intervals to provide intermittent mandatory inspiration through said first inspiratory flow path and expiration through said expiratory flow path, the inspiratory flow valve being open during the inspiratory phase and the expiratory flow valve being closed during the inspiratory phase, the inspiratory flow valve being closed during the expiratory phase and the expiratory flow valve being open during the expiratory phase;

valve means in said second inspiratory flow path to permit spontaneous inspiration through such flow path while expiration is occurring through said expiratory flow path, the valve means comprising a demand valve adapted to permit gas to flow through the second inspiratory flow path from the source to the patient at a flow rate determined by the inspiratory effort of the patient, and a second expiratory valve being provided in said expiratory flow path downstream of said normally open expiratory valve and said demand valve and second expiratory valve are fluid-biased valves and include a regulator connected to the demand valve and second expiratory valve for adjustably biasing both the demand valve and the fluid-biased second expiratory valve so that the expiratory pressure required to stop the supply of gas by the demand valve to the patient is maintained substantially the same as the pressure required to open the second expiratory valve; and,

means for inhibiting the opening of said inspiratory flow valve if the patient is expiring gas at a flow rate above a chosen value, the inhibiting means comprising signal generating means in said expiratory flow path for producing signals representative of the rate of flow of gas expired through said flow path, and means responsive to said signals for inhibiting the opening of said inspiratory flow valve during the exhalation phase.

4,206,755

METHOD AND APPARATUS FOR THE CONTROL AND REGULATION OF GLYCEMIA

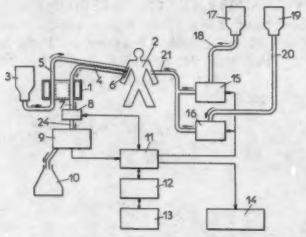
Jean-Claude Klein, Avon, France, assignor to Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S., Paris, France

Filed Apr. 18, 1978, Ser. No. 897,388

Claims priority, application France, Apr. 21, 1977, 77 12054

Int. Cl.[2] A61M *5/00*

U.S. Cl. 128—214 E **6 Claims**



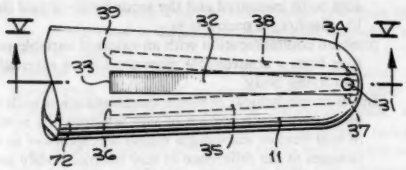
1. A control and regulation system for continuously monitoring glycemia for a diabetic patient, comprising, in combination, means for continuously withdrawing and sampling a low flux of the blood of the diabetic patient, measuring means for continuously determining the glucose concentration in said flux, electronic regulation means for determining the difference between the concentration thus determined and the normal concentration and for determining the quantity of product capable of adjusting the glucose concentration to the normal concentration; means for injecting the diabetic patient with a suitable amount of glucose or insulin to produce said normal concentration, the amount of such injection being controlled by said electronic regulation means, and being a function of said difference.

4,206,756

JET EAR IRRIGATION SYSTEM

Murray Grossan, 8930 Sepulveda Blvd. S., Los Angeles, Calif. 90045

Continuation-in-part of Ser. No. 780,506, Mar. 23, 1977, abandoned. This application Jul. 13, 1978, Ser. No. 924,192
Int. Cl.[2] A61M *3/00*
U.S. Cl. 128—229 5 Claims



1. An irrigation device for use in an ear canal having a tympanic membrane thereacross at one end thereof, comprising:

a tubular cylindrical body having an axis and providing an internal bore along said axis, said body having an end portion of reduced diameter to be inserted into an ear canal,

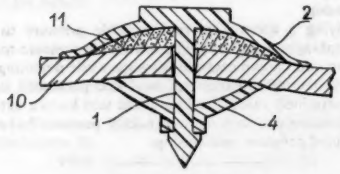
said end portion having an end tip with an end wall section lying across said axis and provided with orifice means spaced from said end wall section including orifices having axes which are inclined forwardly and outwardly relative to said body axis, said orifices constituting the only outlet for pressurized liquid in said bore, the inclination of the orifice axes adapting the orifices to direct impingement of said liquid against wall surfaces of said ear canal without direct impingement of an axial stream against said membrane, said end portion having an external configuration adapted to provide outflow passageways for liquid introduced into said ear canal.

4,206,757

DEVICE FOR THE ADMINISTRATION OF MEDICINAL SUBSTANCES

Jean A. Grandadam, Saint-Maur des Fosses; Daniel Benet, Villemomble, and Alain Jobard, Le Blanc-Mesnil, all of France, assignors to Roussel Uclaf, Paris, France

Filed Jun. 6, 1978, Ser. No. 913,015
Claims priority, application France, Jun. 8, 1977, 77 1717525
Int. Cl.[2] A61M *7/00*
U.S. Cl. 128—260 5 Claims



1. A device for the cutaneous application of medicinal substances, comprising:

an elastically deformable and generally cup-shaped cap having a medicinal substance therein;

an elongated pin-like fastening member carried by said cap and extending from the bottom thereof outwardly past the rim of the cup-shaped cap; and

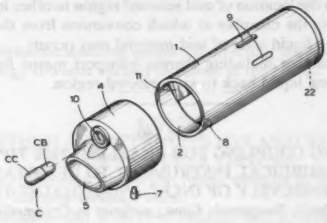
a resilient retaining means for engaging and pulling on said fastening member to thereby pull the bottom of said cup-shaped cap toward a surface against which the rim of said cap is applied and through which said fastening member extends.

4,206,758

DEVICE FOR DISPENSING MEDICAMENTS

Gerald W. Hallworth, Ware, and David Clough, Bishop's Stortford, both of England, assignors to Allen & Hanburys Limited, Bethnal Green, United Kingdom

Filed Apr. 24, 1978, Ser. No. 898,708
Claims priority, application United Kingdom, Apr. 29, 1977, 17976/77; Jan. 11, 1978, 1053/78
Int. Cl.[2] A61M *15/00*
U.S. Cl. 128—203.15 7 Claims



1. An inhalation device for use in administering medicaments from capsules of the kind having a capsule body and a capsule cap which partly overlaps the capsule body, and is secured thereto by a lock structure formed on the capsule body and cap, said device comprising:

(a) a hollow body shell defining a chamber and having an air inlet into said chamber; a nozzle through which the patient can inhale air from said chamber;

(b) capsule retaining means having an inlet opening outside said chamber through which the capsule can be inserted and being arranged to retain an inserted capsule with a portion of the capsule body projecting into said chamber, as well as to squeeze and deform the overlapping portions of the capsule body and capsule cap thereby to weaken or break the lock between the capsule body and the capsule cap;

(c) capsule opening means located inside said chamber; said opening means and said retaining means being relatively movable and being so disposed that relative movement between them will bring the projecting portion of an inserted capsule and said opening means into engagement with one another thereby to separate the capsule from the capsule cap, and

(d) a guard for preventing the separated capsule body from passing through said nozzle when air is aspirated therethrough.

4,206,759

SURGICAL INSTRUMENT HAVING SELF-REGULATED VAPOR CONDENSATION HEATING OF ITS CUTTING EDGE AND METHOD OF USING THE SAME

Robert F. Shaw, 50 St. Germain, San Francisco, Calif. 94114

Continuation-in-part of Ser. No. 534,756, Dec. 2, 1974, Pat. No. 4,089,336, which is a continuation of Ser. No. 63,645, Aug. 13, 1970, abandoned, which is a continuation of Ser. No. 681,737, Nov. 9, 1967, abandoned. This application Mar. 14, 1975, Ser. No. 558,332
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.1 17 Claims

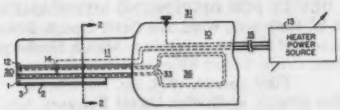
1. A blade comprising:

a cutting means including a cutting edge and thermal distribution means disposed adjacent the region of said cutting edge;

said thermal distribution means including a fluid-tight cham-

ber containing therein a material which has both vapor and liquid stages within a selected temperature range;

said chamber being adapted to be heated in a selected region thereof to an elevated temperature at which said material attains the vapor state;



said chamber providing a channel therein which is thermally coupled to said cutting edge and which transports vapor from the location of said selected region to other locations within the chamber at which conversion from the vapor to the liquid state of said material may occur;

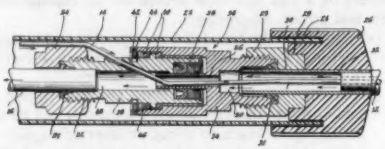
said chamber including therein transport means for transporting liquid back to said selected region.

4,206,760

BEARING COUPLING FOR ENABLING THE TIP OF A CRYOSURGICAL INSTRUMENT TO BE ROTATED INDEPENDENTLY OF INLET AND EXHAUST TUBES

Stephen Davis, Naugatuck, Conn., assignor to Cryomedics, Inc., Bridgeport, Conn.

Filed Jun. 30, 1978, Ser. No. 920,771
Int. Cl.[2] A61B *17/36*
U.S. Cl. 128—303.1 **11 Claims**



1. A cryosurgical instrument comprising:

a housing,

a hollow fitting disposed entirely within said housing having a forward and rear portion;

means rotatably connecting the forward portion of said fitting to the rear portion of said fitting, and including means carried by said forward and rear portions for preventing movement of said forward and rear portions in either direction along their respective axes of rotation upon rotation of said forward portion relative to said rear portion;

gas inlet means and gas exhaust means connected to the rear portion of said fitting;

a surgical tip connected to the forward portion of said fitting in communication with said gas inlet means and gas exhaust means; and

means within said surgical tip between said gas inlet means and gas exhaust means for effecting a Joule-Thompson expansion of gas received from said gas inlet means and exhausted through said exhaust means to cool said tip.

4,206,761

PRESSURE-BALANCED TELEMETRIC PRESSURE SENSING METHOD

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Division of Ser. No. 697,951, Jun. 21, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 895,955
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—660 **42 Claims**

1. A method for measuring an in vivo pressure, said method comprising the steps of:

(a) implanting in a living body a differential pressure sensor comprising:

(1) a housing having an opening therein:

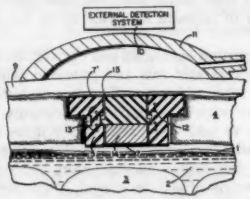
(2) a flexible diaphragm means having a first side and a second side, said flexible diaphragm means extending across said housing opening and being secured with respect to said housing so that when the sensor is implanted in the living body, the first side of said flexible diaphragm means is in

pressure communication with an internal bodily pressure to be measured and the second side of said flexible diaphragm means is in

pressure communication with an external variable pressure from a controllable pressure source external to said living body

and is in mechanical pressure communication with the interior side of a portion of skin whereby the motion of said flexible diaphragm means is responsive to the changes in the difference in said internal bodily pressure and said external variable pressure and the pressure sensor is compensated for atmospheric pressure that is external to the body and in communication with the exterior side of said portion of skin;

(3) means for defining a mechanical contact reference position with respect to said housing of said flexible



diaphragm means, said mechanical contact reference position corresponding to a predetermined pressure relationship between said internal bodily pressure and said external variable pressure;

(4) means having a preselected, detectable parameter that is detectable by detection means external to said living body, said means having a preselected, detectable parameter being at least in part cooperatively connected to and movable with said flexible diaphragm means so that said preselected, detectable parameter will change with movement of said flexible diaphragm means, said preselected, detectable parameter having a predetermined value at said mechanical contact reference position and said preselected, detectable parameter changing with a displacement from said mechanical contact reference position of said corresponding to a change in said pressures from said predetermined pressure relationship;

(b) applying a known external variable pressure to said flexible diaphragm means by said controllable pressure source, and varying said known external pressure while detecting said preselected, detectable parameter until said parameter equals said predetermined value at which point said known external variable pressure and said internal bodily pressure have said predetermined pressure relationship.

4,206,762

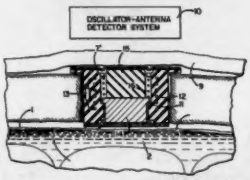
TELEMETRIC DIFFERENTIAL PRESSURE SENSING METHOD

Eric R. Cosman, 872 Concord Ave., Belmont, Mass. 02178

Division of Ser. No. 697,948, Jun. 21, 1976, abandoned. This application Apr. 13, 1978, Ser. No. 895,956
Int. Cl.[2] A61B *5/00*
U.S. Cl. 128—660 **18 Claims**

1. A method for remotely detecting in vivo pressure, said method comprising the steps of:

(a) implanting in a living body a differential pressure sensor comprising:
(1) a housing having means defining an opening extending therethrough;
(2) flexible diaphragm means extending across said housing opening and being secured with respect to said housing, said diaphragm means communicating with pressures in two separate regions external to the sensor with the pressure in one of the regions being an internal bodily pressure when the sensor is implanted in a living body;
(3) means for defining a mechanical contact reference position of said flexible diaphragm means with respect to said housing; and,
(4) means having a preselected, detectable parameter, the preselected, detectable parameter being detectable by detection means located outside the living body, said means having a preselected, detectable parameter being at least in part cooperatively connected to and movable with said flexible diaphragm means so that said preselected detectable parameter will change with movement of said



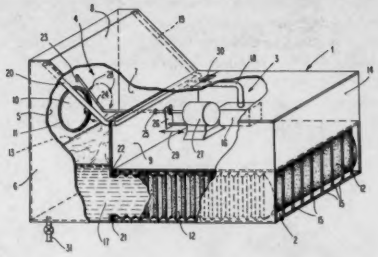
flexible diaphragm means, such that the value of said preselected, detectable parameter changes as a known function of the displacement of said flexible diaphragm means from the reference position, said displacement being a known function of the differences in the external pressures on said flexible diaphragm means;
(b) calibrating the implanted sensor by:
(1) manipulating the sensor through the intact skin of the body to cause the flexible diaphragm means to assume the mechanical contact reference position;
(2) remotely detecting the value of the preselected, detectable parameter when the flexible diaphragm means is at the mechanical contact reference position;
(3) terminating the manipulation of the sensor; and,
(c) thereafter remotely detecting any change in the value of the preselected, detectable parameter from the value at the mechanical contact reference position, said detecting being accomplished without any connection to the sensor which requires a break in the skin, whereby a change in said value represents the difference in pressures on the flexible diaphragm means.

4,206,763
ULTRASONIC SCANNER FOR BREAST CANCER EXAMINATION

Peder C. Pedersen, Darby, Pa., assignor to Drexel University, Philadelphia, Pa.

Filed Aug. 1, 1978, Ser. No. 929,982
Int. Cl.[2] A61B *10/00*
U.S. Cl. 128—660 **18 Claims**

1. Apparatus for ultrasonic breast examination of a patient positioned in an upright manner comprising:
(a) an enclosure having a hole, said hole of appropriate size to fit a breast inserted horizontally therein;
(b) flexible means for storing fluid, said fluid-storage means being in communication with said enclosure;
(c) means for evacuating the upper portions of said enclosure, wherein said evacuation means is of sufficient suction to draw fluid to a level near the top of said enclosure when a breast is inserted into said hole; and

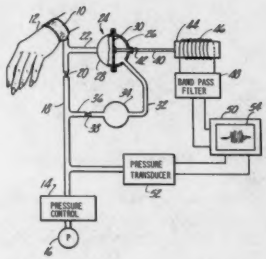


(d) ultrasonic scanning means for directing ultrasonic wave energy towards various locations in the breast.

4,206,764
METHOD AND APPARATUS FOR ANALYZING CARDIOVASCULAR SYSTEMS

William J. Williams, Ann Arbor, Mich., assignor to Weisman & Allen, Madison Heights, Mich.

Continuation-in-part of Ser. No. 748,528, Dec. 8, 1976, Pat. No. 4,117,835. This application Jun. 5, 1978, Ser. No. 912,558
Int. Cl.[2] A61B *5/02*
U.S. Cl. 128—677 **9 Claims**



1. The method of analyzing the functioning of the cardiovascular system in a mammal comprising:
applying an inflatable pressure chamber against the body of the mammal in proximity to a blood vessel so that the pressure within the chamber is exerted against the vessel;
gradually varying the pressure in the chamber between a value at which the vessel is occluded to prevent blood flow therethrough and a pressure value below the diastolic pressure in the vessel over a time period extending over a number of heartbeats;
continuously generating a plot of the instantaneous rate of change of pressure in the chamber as a function of pressure during such pressure change time period;
and detecting anomalies in the plot which are related to anomalies in the functioning of the mammal's cardiovascular system.

3. Apparatus for generating a plot of information related to the functioning of the cardiovascular system of a mammal comprising:
an inflatable pressure chamber adapted to be positioned on the body of the mammal in proximity to a blood vessel so that a pressure is exerted on the exterior of the vessel which is a direct function of the pressure within the chamber;
means for modifying the pressure within the chamber through a cycle of varying pressure between a level which

causes occlusion of the vessel and a level of pressure below diastolic pressure in the vessel over a time period of at least several heartbeats;

means for generating a first electrical signal proportional to the average pressure within the chamber;

means for continuously generating a second electrical signal proportional to the instantaneous rate of change of pressure within the chamber;

and means for generating a plot of the first electrical signal as a function of the second electrical signal during the cycle.

4,206,765

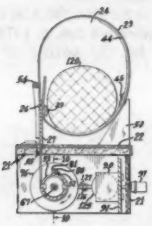
CUFF MECHANISM

Thomas G. Huber, St. Petersburg, Fla., assignor to Vita-Stat Neducak Services, Inc., St. Petersburg, Fla.

Filed Aug. 18, 1977, Ser. No. 825,675

Int. Cl.[2] A61B *5/02*

U.S. Cl. 128—677 **40 Claims**



1. A cuff mechanism for use in a blood pressure measuring system comprising:

a. an elongated flexible cuff band of a predetermined width defining an opening for receiving a portion of a user's body in which blood circulation is to be temporarily occluded;

b. mechanical contracting means having a relaxed state and a contracted state and being attached to said band substantially throughout the width thereof for exerting a force thereon to circumferentially contract said band snugly about the portion of the user's body;

c. power drive means for intermittingly driving said mechanical contracting means;

d. automatic and adjustable slip clutch means connected between said mechanical contracting means and said power drive means to provide relative motion therebetween after obtaining snug wrapping of said band about various sized body portions of different users and slipping thereafter to prevent occlusion of the blood circulating therethrough, said slip clutch means including a slip clutch between said power drive means and said mechanical contracting means, and an adjustable means engaged with said slip clutch for selectively adjusting said slip clutch to slip upon said band reaching a predetermined snug fit;

e. a flexible fluid chamber located adjacent said band and in position to contact the portion of a user's body for causing the flow of blood therethrough to be occluded; and

f. selective pressure means for supplying fluid to said chamber to expand same and occlude the flow of blood through the portions of the user's body in contact with said chamber.

4,206,766

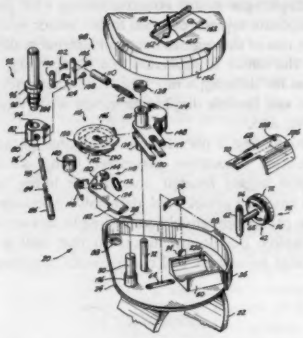
APPARATUS FOR DETECTING ANIMAL ESTRUS

Robert P. Bielka, 2211 N. 59th St., Seattle, Wash. 98103

Filed Jul. 28, 1978, Ser. No. 928,829

Int. Cl.[2] A01K *11/00*; A61B *10/00*

U.S. Cl. 128—738 **15 Claims**



1. An apparatus, adapted to be secured to the rump portion of a first animal, for indicating estrus in said first animal, comprising:

a base means;

a pressure responsive means supported by said base means;

a linkage means interconnected with said pressure responsive means;

a release means, including a movable release member, interconnected with said linkage means and supported by said base means;

a cover means releasably engaged with said base and interconnected with said release means; and

an indicating means, mounted on said cover means and wherein

said pressure responsive means is for powering said linkage means when said pressure responsive means is subjected to at least a predetermined pressure caused by a second animal mounting said first animal;

said linkage means is for powering said release means when said linkage means is powered by said pressure responsive means; and

said release means is for releasing said cover means from said base means and actuating said indicating means after said release means has been powered by said linkage means.

4,206,767

UROLOGICAL DRAINAGE MONITOR

Robert C. Wingrove, Afton, Minn., assignor to Medical Devices, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 738,752, Nov. 4, 1976, abandoned. This application Oct. 31, 1977, Ser. No. 847,249

Int. Cl.[2] A61B *5/00*

U.S. Cl. 128—762 **19 Claims**

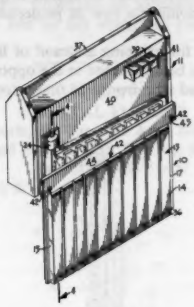
12. A liquid collector comprising:

a storage section having a unitary array of elongated storage chambers in substantially flat side-by-side relation for separately receiving and displaying liquid, said chambers having individual inlet nipples in first ends thereof;

a manifold section integral with said storage section and having an inlet for liquid, an elongated header connected to said inlet, and a plurality of liquid discharge openings positioned along said header;

discrete collapsible conduit means interposed between said discharge openings and said nipples for connecting said

chambers severally to said openings to enable and prevent flow of liquid therebetween; and



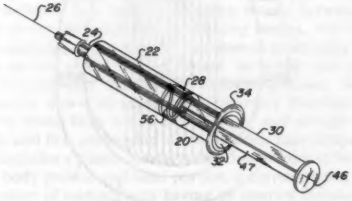
support means for suspending said collector with said chambers extending vertically below said header, and with said header sloping downwardly from said inlet.

4,206,768

SYRINGE DEVICE WITH MEANS FOR SELECTIVELY ISOLATING A BLOOD SAMPLE AFTER REMOVAL OF CONTAMINATES

Donald L. Bailey, Thornton, Colo., assignor to Marquest Medical Products, Inc., Englewood, Colo.

Filed Oct. 20, 1978, Ser. No. 952,994
Int. Cl.² A61B 5/14
U.S. Cl. 128—763 **8 Claims**



1. A syringe device for drawing blood samples comprising

a tubular body having an interior surface defining an elongated interior chamber, said tubular body having one open end and an end member at the opposite end, said end member having a bore therethrough defining means for connection to a hypodermic needle;

a plunger means slideably positioned within said tubular body;

a sealing member operatively connected to said plunger means including resilient means capable of establishing an hermetic seal with said interior surface,

seal interrupting means attached to said plunger adapted to interrupt said hermetic seal; and

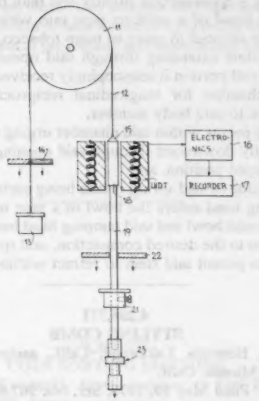
means for moving said seal interrupting means to restore the hermetic seal and thereby prevent fluid flow past said sealing member.

4,206,769

MEASUREMENT OF SURFACE PROPERTIES

Shabtay Dikstein, 7 Habanai St., Jerusalem, Israel

Filed Jun. 15, 1978, Ser. No. 915,875
Claims priority, application Israel, Mar. 14, 1978, 54277
Int. Cl.² A61B 5/00
U.S. Cl. 128—774 **17 Claims**



1. A device for accurate measurements of properties of a passive surface, such as human skin, the device comprising:

(a) a probe one end of which is to be placed on a passive surface whose properties are to be measured;

(b) means coupled to a second end of said probe for selectively applying a predetermined pressure via said one end of said probe to the surface of the order of from 5 g/cm² to 40 g/cm² and for reducing said pressure to at least to a given lower pressure;

(c) sensing means coupled to said probe and responsive to its position for providing an output signal representive of height change of said surface against time when said predetermine pressure is applied and reduced; and

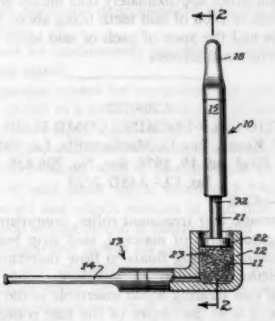
(d) means coupled to said sensing means for recording the output signal therefrom.

4,206,770

TOBACCO TAMPING TOOL FOR SMOKING PIPE

Cano A. Ozgener, 830 Kendall Dr., Nashville, Tenn. 37209

Filed Feb. 13, 1978, Ser. No. 877,003
Int. Cl.² A24F 9/02
U.S. Cl. 131—247 **4 Claims**



1. A tobacco tamping tool for a smoking pipe having a

tobacco-receiving bowl of predetermined cross-section comprising:

(a) a body member having an elongated cylindrical chamber normally vertical in operative position,

(b) said cylindrical chamber having an upper closed end wall and an opening in the lower end of the said chamber,

(c) an elongated stem having upper and lower end portions,

(d) said lower end portion terminating in a tamping head having a cross-section slightly less than the cross-section of the bowl of a smoking pipe into which said tamping head is adapted to enter to tamp tobacco,

(e) said stem extending through said opening so that said upper end portion is telescopingly received wholly within said chamber for longitudinal reciprocable movement relative to said body member,

(f) spring means within said chamber urging said stem longitudinally downward through said opening to a normally protracted position, and

(g) the value of said spring means being such that when said tamping head enters the bowl of a pipe to tamp tobacco within said bowl and said tamping head has depressed said tobacco to the desired compaction, said spring means will yield to permit said stem to retract within said chamber.

4,206,771

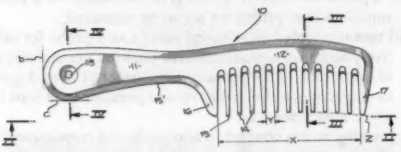
STYLING COMB

William K. Heinlein, Lakewood, Calif., assignor to Hi-Line Inc.,, La Mirada, Calif.

Filed May 19, 1978, Ser. No. 907,680

Int. Cl.[2] A45D *24/00*

U.S. Cl. 132—11 R **8 Claims**



1. In a styling comb adapted to be pulled through the hair of a user having a handle portion and an integral toothed portion, the invention which compromises:

said toothed portion includes eleven teeth along a linear extent of approximately 2.075 inches, each of said teeth being generally trapezoidally shaped and generally symmetrical about its longitudinal axis in a plane perpendicular to the direction of movement of the comb through the hair of a user, each of said teeth having its widest cross section integral with and extending from said toothed portion and its smallest cross-section at its terminal end, all of said teeth terminating in flattened apices lying in a common arcuate plane, said teeth being equally spaced from each other approximately 0.25 inches with the widest portion of each of said teeth being about 0.3 inches in thickness and the apex of each of said teeth being about 0.075 inches in thickness.

4,206,772

AUTOMATIC SELF-LOCKING COMB HAIR ROLLER

Jacqueline F. Koepp, Box O, Madisonville, La. 70447

Filed Jul. 19, 1976, Ser. No. 706,435

Int. Cl.[2] A45D *2/18*

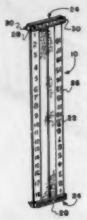
U.S. Cl. 132—43 R **11 Claims**

1. An automatic hair treatment roller, comprising:

a. an elongated strip of material, said strip being of open mesh design allowing fluids to flow therethrough, there being further included an auxiliary, easily rupturable packet of hair treating liquid insertable in the area of said strip which is at the center of the hair roller when it is rolled up;

b. first means for gripping a strand of hair and for piercing the rupturable packet to allow the hair treating liquid to flow into the hair, said first gripping means being located at one end portion of said elongated strip, said first gripping means prividing a row of projecting hair gripping comb tines;

c. second means for gripping a strand of hair, said second gripping means being located at the opposite end portion of said elongated strip from said first gripping means, said



second gripping means providing a row of hair gripping comb tines; and

d. resilient means for urging said elongated strip into a coiled position, so that when a strand of hair is applied to said elongated strip, in an extended position, said gripping means engages and holds one end of said strand of hair, said second gripping means holds the opposite end of said strand of hair, and said strip and said strand of hair will roll into a curled position when said strip is released.

4,206,773

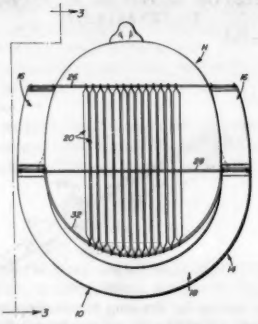
HAIR HOLDER

William A. DeHerrera, 1301 N. Allen, Farmington, N. Mex. 87401

Filed Oct. 7, 1977, Ser. No. 840,327

Int. Cl.[2] A45D *24/36*

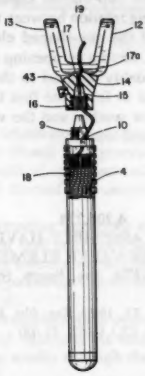
U.S. Cl. 132—45 R **7 Claims**



1. A hair holding device for facilitating cutting of hair, said device comprising a downwardly opening frame contoured to conform substantially to the shape of a human head and arrangeable on a head of a person whose hair is to be cut, said frame including a pair of upstanding opposite side support and guide members, gauge means, said gauge means including a plurality of closely opposing generally horizontal vertically registered and forwardly opening C-shaped gauge members, said members being wedge shaped in cross section and tapering in thickness inwardly toward the central portion of the area bound thereby, said members including inner portions thereof slidingly supported on said support and guide members for limited vertical shifting therealong and adapted to loosely embracingly receive the rear and opposite side portions of a human head therein, said gauge members being positionable on

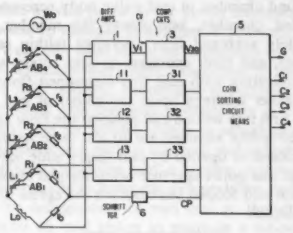
said guide members in slightly vertically spaced apart relation, whereby the free end portions of the hairs in vertically spaced horizontal zones of hair on the associated human head may project outwardly from and be gripped between adjacent gauge members and be cut along the outer surfaces of the gauge members.

4,206,774
DENTAL FLOSSER
Andrew G. Griparis, 251 Republic Ave., Joliet, Ill. 60435
Filed Jul. 31, 1978, Ser. No. 929,875
Int. Cl.² A61C *15/00*
U.S. Cl. 132—92 R **3 Claims**



1. A dental flosser, comprising a body portion, a storage cavity therein to receive a supply of dental floss, a head portion secured to said body portion at a first end thereof, said head portion including spaced apart first and second positioning means to position a taut length of dental floss between said first and second positioning means, a communicating passageway from said storage cavity to said positioning means for a strand of dental floss to feed from said storage cavity to said positioning means, and tension retaining means to hold a said taut length of dental floss under tension between said first and second positioning means, wherein said tension retaining means includes first tension retaining means between said storage cavity and said first positioning means, and second tension retaining means between said second positioning means and an anchor point on said flosser, including said anchor point, wherein said first tension restraining means includes compression means to receive and compress therebetween a strand of dental floss which extends from said storage cavity towards said first positioning means, wherein said compression means includes a frusto-conical projection extending from one of said body portion and head portion, a corresponding recess in the other of said portions having an interior frusto-conical configuration and dimension corresponding to that of said frusto-conical projection, said strand of dental floss passing freely between the outer surface of said frusto-conical projection and the inner surface of said recess when said head portion is loosened from said body portion, said strand of dental floss being tightly compressed between said surfaces when said head portion is tightly secured to said body portion, wherein said frusto-conical projection extends from said body portion and said recess is in said head portion, said frusto-conical projection having a cylindrical base portion adjacent said end of said body portion from which it extends, said cylindrical base portion being of smaller diameter than the corresponding dimension of said body portion, a flat shoulder extending laterally out from said cylindrical base portion of said frusto-conical projection toward the edge of said body portion and annularly around said cylindrical base portion, said cylindrical base portion being externally threaded, a flat cut-away portion of said cylindrical base portion extending longitudinally thereof to provide a passageway for a strand of dental floss between said flat cut-away portion and internal threads of corresponding internally threaded portion of said recess when threadedly engaged therewith, including an internally threaded portion of said recess in said head portion, and an aperture opening in said shoulder adjacent said flat cut-away portion, said aperture communicating with said storage cavity to permit a strand of dental floss to pass therefrom, through said aperture, past said flat cut-away portion of said threaded cylindrical base portion of said frusto-conical projection, and toward said first positioning means.

4,206,775
COIN SORTING MACHINE
Akio Tanaka, Kawasaki, Japan, assignor to Fuji Electric Co., Ltd., Kawasaki, Japan
Filed Jun. 20, 1978, Ser. No. 917,429
Claims priority, application Japan, Jun. 21, 1977, 52-73726
Int. Cl.² G07D *5/00*; G07F *3/02*
U.S. Cl. 133—3 R **5 Claims**



1. A coin sorting machine of the type in which an A.C. excitation signal is applied to a bridge circuit having a sorting coil whose impedance is varied by the passage of a coin and a standard impedance element having an impedance corresponding to a particular coin denomination, the output signal of said bridge, when said bridge is balanced, indicating the passage of a coin of said particular denomination, wherein the improvement comprises:

clock means for continuously providing a periodically varying clock signal;

first comparison means for comparing the output from said bridge circuit to a reference voltage and providing a first comparison output signal in the form of a binary pulse train which periodically alternates between first and second binary values with a period equal to at least one period of said clock signal when said bridge circuit is unbalanced and which remains at said first binary value when said bridge circuit is balanced; and

second comparison means for comparing said clock signal and said first comparison output signal and producing a coin sorting signal only when said second binary value of said first comparison output signal does not occur within a predetermined period having a duration equal to at least one period of said clock signal.

4,206,776

GRAVITY-CONTROLLED FLOW VALVE

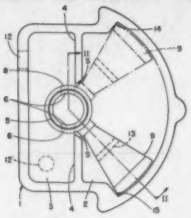
Eberhard Bader, Munich, Fed. Rep. of Germany, assignor to Motoren- und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Oct. 25, 1978, Ser. No. 954,635

Claims priority, application Fed. Rep. of Germany, Oct. 29, 1977, 2748692

Int. Cl.[2] F16K *17/36*

U.S. Cl. 137—45 5 Claims



1. A gravity-controlled flow valve, particularly for aircraft, comprising in combination:

(a) a valve body having a first chamber formed therein; a gravity-controlled pendulum in said first chamber movable between two limit stops in said valve body;

(b) a rotary slide valve fixedly connected with said pendulum; a sleeve-like member rigidly fastened to said valve body, said rotary slide valve being pivotally supported on said sleeve-like member, said member having one end closed and the other end thereof open for infeed of liquid into the flow valve;

(c) a second chamber in said valve body screened off from said first chamber, said sleeve-like member including oppositely arranged flow apertures within said second chamber; and flow apertures in said rotary slide valve communicating with said first-mentioned flow apertures in a manner whereby upon movement of said pendulum from a first into second end position the flow apertures of said sleeve-like member are to the same extent increasingly closed or opened by said rotary slide valve; and

(d) at least one outlet aperture being formed in communication with said second chamber for the egress of the introduced liquid.

4,206,777

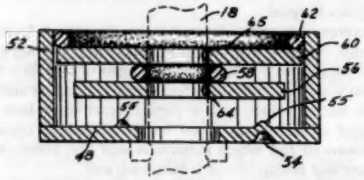
VACUUM BREAKER VALVE AND STEM PACKING ASSEMBLY

Elder F. Hirsch, 520 21st St., and Ronald F. Hirsch, 707 E. 20th St., both of Greeley, Colo. 80631

Filed Dec. 15, 1975, Ser. No. 641,074

Int. Cl.[2] F16K *24/02*

U.S. Cl. 137—218 6 Claims



6. A one-way valve means to provide a one-way seal between the valve stem and the sill cock housing of a sill cock which comprises a cup-shaped member having a bottom and upstanding walls, with the bottom having an opening therein adapted to receive the valve stem, a first washer within the cup-shaped element having a center opening sized to receive the valve stem in sliding relation, a first O-ring positioned adjacent the first washer of a size to provide a seal between the first washer and the valve stem, a second washer adjacent the first O-ring having a center opening receiving the valve stem in sliding relation and having an outside diameter only slightly less than the inside diameter of the upstanding walls of the cup-shaped member and a second O-ring adjacent the second washer having an outside diameter to just fit within the upstanding walls of the cup-shaped member wherein water pressure within the cock housing will cause said first washer, first O-ring, second washer, and second O-ring to be moved away from the bottom of the cup-shaped element and force the second O-ring into sealing relation between the second washer, the upstanding walls of the cup-shaped element and a body member of the sill cock, having an opening adapted to receive a valve stem and threadably secured to the cock housing in water tight relation, and to force the first O-ring into sealing relation between the first washer and the valve stem and the valve stem and the second washer.

4,206,778

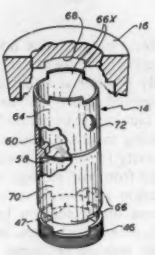
ROTARY VALVE ASSEMBLY HAVING A DUAL PURPOSE VALVE ELEMENT

William C. Gallo, 4602-27th Ave, South, St. Petersburg, Fla. 33711

Filed Jan. 15, 1979, Ser. No. 3,257

Int. Cl.[2] F16K *51/00*

U.S. Cl. 137—315 5 Claims

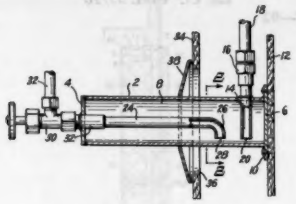


1. A rotary valve assembly comprising a housing formed with a cylindrical bore extending downwardly therewithin; a knob for operating the valve assembly; a core disposed in said bore with an outer cylindrical surface of the core uniformly spaced from said bore's surface to provide an intervening cylindrical space between the core and the bore, said core having a lower, integral, annular flange; a nut insertable in said intervening space and coacting with a threaded area of said bore and with said flange to hold said core in place in the housing; an oscillatory, cylindrical valve element having a lower sleeve portion slidable angularly within said intervening space, and having a valving opening coacting with fluid passages in said housing and core in approximately one angular position of said valve element to open the valve, said valve element having an upper sleeve portion, rigidly integral with said lower sleeve portion and having radial dimensions similar to said lower sleeve portion, and said upper sleeve portion being adapted, at its upper end, to coact with said knob to enable turning of the latter to turn the valve element back and forth between open and closed positions; and, in a non-valving capability condition of the valve, with said valve element inverted, said upper sleeve portion of the valve element and said nut being adapted to coact to tighten or loosen said nut in assembling or disassembling the valve.

4,206,779
WATER LINE TERMINATOR

Wayne R. Sandstrom, Box 2414, Fairbanks, Ak. 99707

Filed Mar. 29, 1978, Ser. No. 891,264
Int. Cl.[2] F16L 5/00
U.S. Cl. 137—360 2 Claims



1. A water line terminator comprising:

walls defining a closed and generally cylindrical chamber having a cylindrical wall, end walls and a radial flange at one end wall thereof for mounting said chamber on a support;

an inlet tube extending generally radially into one side of said cylindrical wall said chamber adjacent said one end and across the interior of said chamber to an inner end terminating adjacent but spaced from the other side of said cylindrical wall;

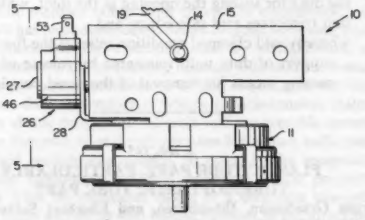
an outlet tube extending axially within said chamber from an inner open end adjacent, the inner end of said inlet tube and extending axially through the other end wall of said chamber; and

manually operable valve means on said outlet tube outwardly of said other end.

4,206,780
PRESSURE OPERATED WATER LEVEL CONTROL DEVICE AND TEMPERATURE RESPONSIVE UNIT THEREFOR OR THE LIKE

Siegfried E. Manecke, and Thomas M. Buckshaw, both of Indiana, Pa., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 1, 1977, Ser. No. 856,404
Int. Cl.[2] H01H 37/46
U.S. Cl. 137—387 14 Claims

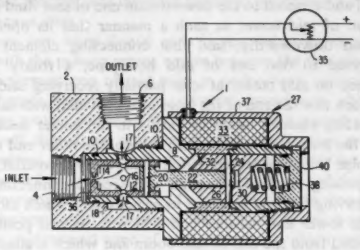


1. In a pressure operated water level control device having a movable selector means for selecting different water level settings thereof, the improvement comprising a heat motor means carried by said device and being operatively associated with said selector means for moving said selector means to a certain low water level setting thereof when said heat motor means is activated, said heat motor means comprising a temperature operated piston and cylinder unit that extends its said piston when heated and retracts its said piston when cooled, said heat motor means comprising an electrical heater operatively associated with said piston and cylinder unit to heat said unit when said heater is activated, said heater being substantially annular and being disposed in substantially a concentric relation about said cylinder of said unit, and a pair of telescoping annular electrical insulating members carrying said heater therebetween, said telescoping members being telescoped on said cylinder of said unit.

4,206,781
SELF-ACTUATED FLOW CONTROL VALVE

Jack N. Salter, 2920 Dixie, Pontiac, Mich. 48055

Filed Jun. 7, 1978, Ser. No. 913,289
Int. Cl.[2] G05D 7/01
U.S. Cl. 137—504 8 Claims

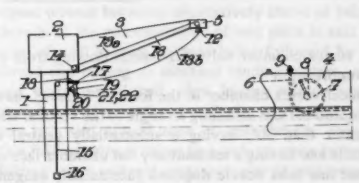


1. A self-actuated flow control valve comprising a piston and a cylinder made of a material having a high permeability in which said piston reciprocates, an orifice in said piston through which fluid is discharged into said cylinder producing an axial thrust proportional to the rate of fluid flow through said orifice, a discharge orifice in the wall of said cylinder proportionately throttled by said piston as the piston traverses said cylinder in response to changes in differential pressure, a solonoid producing a counter axial thrust on said piston having a winding and an armature operatively connected to said piston, a housing for said winding comprising an external shroud of material having a high magnetic permeability in contact with said cylinder, and an internal sleeve in which said armature reciprocates made of a section adjacent said cylinder having a low magnetic permeability and a section remote from said cylinder having a high magnetic permeability and means for adjusting the energization of said coil to thereby vary the counter thrust on said piston to maintain a set-point rate of fluid flow through the valve.

4,206,782
EQUIPMENT FOR CONNECTING OIL-TANKERS TO MARINE TOWERS

Samuel Tuson, Mesnil-le-Roi, France, assignor to Enterprise d'Equipments Mecaniques et Hydraulics E.M.H., France

Filed Oct. 12, 1977, Ser. No. 841,483
Claims priority, application France, Oct. 19, 1976, 76 31432
Int. Cl.[2] F16L 3/00
U.S. Cl. 137—615 16 Claims



1. A device for fluidly connecting a tanker to a marine tower having a boom freely pivotable on said tower about the longitudinal axis thereof, said boom being vertically stationary

relative to said tower, for transferring fluid between said tower and said tanker, comprising: means for mooring said tanker to said tower and means for connecting a fluid supply conduit mounted on said tower to a fluid receiver conduit mounted on said tanker including a flexible hose-pipe stored on said tanker, said mooring means including a mooring hawser having one end coupled to said tower adapted to be at least partially retractable in said tower and having another end adapted to be attached to said tanker, said connecting means including first and second connecting elements fluidly connectable to one another by relative displacement towards one another, said second connecting element being mounted on the end of said boom, and coupled to the downstream end of said fluid supply conduit of said tower in such a manner that its opening is directed downwardly, said first connecting element being connected to one end of said hose-pipe, a rotary pulley mounted on said tanker at least partially receiving said hose-pipe such that the end of the hose-pipe provided with said first connecting element opens upwardly in the tanker deck even when the hose-pipe is in stored position, the other end of said hose-pipe being connected to said fluid receiver conduit, and a rope passing vertically through said second connecting element having one end attached to an actuating winch mounted on said tower and another end which in its rest position is suspended from the end of said boom and which is adapted to be transferred to said tanker and attached to an attachment member provided on the the top of said first connector element and to move said first connecting element vertically either towards or away from said second connecting element upon actuation of said winch.

4,206,783

VORTEX CHAMBER VALVE

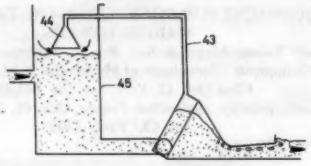
Hansjörg Brombach, Kirchbergstrasse 37, D-6990 Bad Mergentheim, Fed. Rep. of Germany

Filed Mar. 2, 1978, Ser. No. 882,705

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712443

Int. Cl.² F15C *1/16*

U.S. Cl. 137—810 **26 Claims**



1. A vortex chamber valve for liquids flowing from a head race, comprising:

a conical vortex chamber in the form of a funnel, having a longitudinal axis assuming an angle to the vertical which is greater than 30°, having a substantially central outlet nozzle and having a substantially flat chamber face cover;

at least one inlet nozzle disposed substantially tangentially into the chamber in the vicinity of the lowest point of the largest cross-sectional area of said chamber; and,

an eccentrically arranged venting port disposed in the vicinity of the highest point of the chamber and having a feed line extending above the level of the head race.

4,206,784

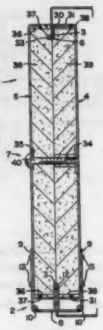
ACCESS DOOR

Leonard Phillips, 6001 Bayou Grande Rd., St. Petersburg, Fla. 33703

Continuation of Ser. No. 719,736, Sep. 2, 1976, abandoned. This application Jan. 16, 1978, Ser. No. 869,693

Int. Cl.² F16L *55/10*

U.S. Cl. 138—92 **7 Claims**



1. An access door for use in combination with an opening in a heating, ventilating or air conditioning duct defined by top, bottom and side edges, comprising in combination;

a first pan for the interior of said duct, said first pan having a configuration which enables the pan to be inserted through the opening and to overlap edges of the opening when placed in registration with the opening;

a second pan for the exterior of said duct, said second pan having a configuration which will overlay all edges of the opening;

means serving as a first function support for said first and second pans to establish said first pan on the inner side of the duct and for establishing said second pan on the outer side of the duct;

said first function support means enabling said first and second pans to be opened from one side of the duct to gain access therethrough and for enabling said first and second pans to be closed from said one side of the duct;

connecting means for mechanically drawing said second pan to said first pan in a primary final clamping condition to simultaneously engage the inner and outer wall surfaces of the duct for sealing the opening in the duct, which condition reinforces said side edges; and

whereby said clamped condition relieves the first function support of duty until reinstated by release of the connecting means for removal of the panel couple.

4,206,785

PLASTIC TUBE PART, PARTICULARLY THERMOPLASTIC TUBE PART

Jürgen Graafmann, Ibbenbüren, and Eberhart Setzer, Twist, both of Fed. Rep. of Germany, assignors to Wavin B.V., Zwolle, Netherlands

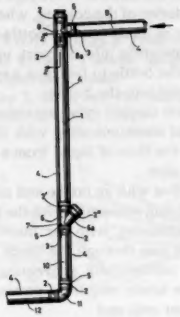
Filed Apr. 27, 1978, Ser. No. 894,005

Int. Cl.² F15D *1/00*

U.S. Cl. 138—149 **3 Claims**

1. A thermoplastic tube part having a socket end provided with an internal groove chamber for accomodating sealing means parts, said thermoplastic tube part being provided with a sound-insulating layer of a soft polyurethan foam plastic, having at least a closed skin on its outer surface, said foam plastic layer having been foamed onto the outer surface of a thermoplastic tube part chosen from plastic tubes of polyvinylchloride and polyolefin tubes, wherein the outer diameter of

the sound insulating layer is at most equal to the greatest outer diameter of the socket end and said foam plastic contains inor-



ganic filling agent particles in an amount comprised between 150 and 250% by weight of the foam.

4,206,786

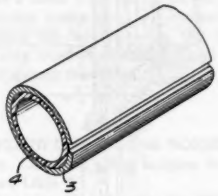
HEAT RECOVERABLE ARTICLE WITH FUSIBLE MEMBER

Judson D. Wetmore, San Diego, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 499,923, Oct. 21, 1965, abandoned, which is a division of Ser. No. 211,747, Jul. 23, 1962, Pat. No. 3,243,211. This application Mar. 24, 1975, Ser. No. 561,259

Int. Cl.² F16L *9/12, 9/22*

U.S. Cl. 138—178 **7 Claims**



1. A heat recoverable article comprising a recoverable member and a fusible member having a fusion temperature, said recoverable member comprising crystalline elastomeric material which has been distended from an original state and, frozen and maintained in the distended state by refrigeration, said fusible member being in abutting relation with said recoverable member, the fusion temperature of said fusible member being lower than the temperature at which said elastomeric material possesses elastic properties, wherein said recoverable member, upon the removal of said refrigeration for a time sufficient to permit said recoverable member to warm to the temperature where the elastomeric material possesses elastic properties, recovers from its distended shape in a direction towards it original shape and urges said fusible member in the direction of recovery of said recoverable member.

4,206,787

METHOD OF PROVIDING A SEAM IN DOUBLE-LAYER FORMING FABRICS

Ingvald Strandly, Oslo, Norway, assignor to Nordiskafilt AB, Halmstad, Sweden

Filed Sep. 18, 1978, Ser. No. 943,118

Int. Cl.² D03D *25/00*

U.S. Cl. 139—383 A **3 Claims**

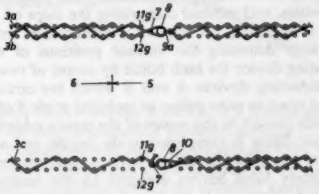
1. A method of providing a row of loops at each end of a weave, said weave comprising two layers of weft threads with the threads positioned in pairs substantially one above the other, warp threads interconnecting said weft layers, and a locking wire intended to interconnect said rows of loops to form an endless fabric web, the method comprising

removing permanently the weft threads in a first zone closest to one end edge of said weave,

removing temporarily the weft threads in a second zone adjacent said first zone,

arranging said temporarily removed weft threads, alternatively a corresponding number of weft threads, together with one or several thin wires and one coarse folding wire as a warp wherein said coarse wire temporarily replaces said locking wire intended finally to interconnect the two weave ends,

where two warp thread ends in succession in accordance with the pattern repeat weave between the threads of the outermost one of said pairs in said second zone of weft threads, carrying one of said warp thread ends, after having woven said warp thread end into said second zone of weft threads in accordance with the correct weaving pattern, in a loop around said thin folding wire (or wires) as well as around said coarse folding wire and thereafter carrying said warp thread end in the reverse direction in the position of said second warp thread to a pick-up place in said second zone of weft threads, at which point said two warp threads meet,



where two subsequent warp thread ends in accordance with the pattern repeat weave over and below, alternatively below, the threads of the outermost one of said pairs in said second zone of weft threads, carrying one of said warp thread ends, after having woven said warp thread end into said second zone of weft threads in accordance with the correct weaving pattern, around said thin folding wire or wires and thereafter carrying said warp thread end in the reverse direction in the position of said second warp thread to a pick-up place in said second zone of weft threads, at which place said two warp threads meet,

where one warp thread end in accordance with the pattern repeat weaves between, alternatively above or below, the threads of the outermost one of said pairs in said second zone of weft threads without being followed by a warp thread end having an identical binding pattern, carrying said warp thread end, after having woven said warp thread end in accordance with the correct weaving pattern into said second zone of weft threads, around said thin folding wire or wires to a pick-up place between said folding wires and said outermost pair in said second zone of weft threads, and

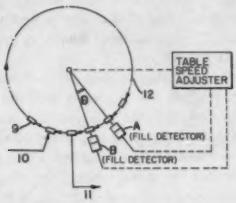
treating said warp thread ends at both edges of said weave in the same manner and preferably simultaneously, said coarse folding wire being common to said warp thread ends of both fabric end edges.

4,206,788

METHOD FOR CONTROLLING FILLING RATE IN FILLING MACHINE

Akihiro Susaki, Wakayama; Noboru Tsuboki, Koshigaya; Kyoichi Amino, Saitama, and Minoru Hosoya, Tokyo, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 960,174
Claims priority, application Japan, Nov. 24, 1977, 52-140976
Int. Cl.[2] B65B 3/34
U.S. Cl. 141—1 3 Claims



1. In a method controlling the filling rate of a rotary filling machine wherein bottles are placed onto a rotary table, vertically reciprocable filling nozzles are moved with the table and are inserted into the bottles while the bottles are moved along a circular path by rotation of the rotary table and a predetermined amount of a substance is filled from the nozzles into the bottles, said rotary filling machine having vertically reciprocable position indicating devices attached to the pistons that move the respective filling nozzles up and down in the vertical direction for indicating the amount of said substance present in the bottles, said method comprising the steps of: immediately prior to removing the respective filled bottles from the table, separately detecting the vertical positions of said position indicating device for each bottle by means of two piston position detecting devices A and B which are circumferentially spaced apart so as to define an included angle θ of from 10° to 30° with respect to the center of the rotary table to determine whether filling is completed in the bottle; and adjusting the rotation speed of the rotary table so that the proportion of completely filled bottles detected by the leading detecting device A during each rotation of the rotary table is less than 100% and so that the proportion of completely filled bottles detected by the trailing detecting device B during each rotation of the rotary table is 100%.

4,206,789

ARRANGEMENT FOR FILLING LIQUIDS INTO A CONTAINER

Heinrich Jordan, Wormsstr. 13, 4600 Dortmund 1, and Uwe Knabe, Wickeder Chaussee 213, 4600 Dortmund 13, both of Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,000
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2745642
Int. Cl.[2] B65B 3/04, 31/00
U.S. Cl. 141—39 7 Claims

1. A device for use in filling machines which fill bottles and the like with liquids, comprising:

(a) a vertically elongated hollow filling pipe with a top end and a bottom end and an interior extending downwardly through the top of the bottle to be filled, the pipe having a port located at a predetermined height to which the bottle is to be filled and the pipe extending downwardly to a point within the bottle which point is intermediate the port and the bottom of the bottle, whereby liquid can be introduced into the bottle through the bottom end of the pipe;

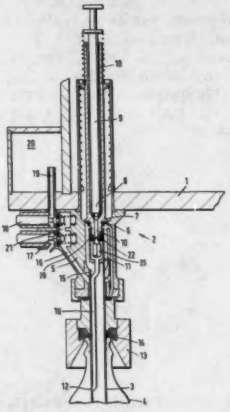
(b) a vertically elongated hollow gas conduit with an interior, a top end and a bottom end, the volume of the interior of the conduit being small with respect to the volume of the interior of the pipe, the conduit being located at least partially inside the pipe and the lower end of the conduit being secured to the periphery of the port in a manner that the interior of the pipe does not communicate with the interior of the conduit, whereby the gas displaced by the flow of liquid into the bottle through the filler pipe can flow upwardly into the port, up through the conduit and out of the bottle to facilitate a continuous and smooth flow of liquid into the bottle;

(c) a liquid flow control valve associated with the top end of the pipe and communicating with the interior of the pipe to regulate the flow of liquid from a reservoir into the top end of the pipe;

(d) a check valve with an intake end and an exhaust end, the intake end being associated with the top end of the conduit and communicating with the interior of the conduit to allow gas to pass through the check valve in either direction while substantially preventing liquid entering the check valve intake end from passing through the check valve exhaust end; and

(e) a gas flow control valve associated with the check valve exhaust end and communicating with the interior of the check valve to regulate the flow of gas in the check valve, whereby the flow of gas through the conduit may be regulated;

(f) a relief valve associated with the top end of the pipe and



further associated with the outside atmosphere, the relief valve being normally closed and keeping the interior of the pipe isolated from the atmosphere and being operable to port the interior of the pipe and thereby the top of the bottle to the atmosphere and allow any liquid in the conduit to flow downwardly into the bottle;

g. a housing containing the relief valve and having a control chamber, the housing and the top end of the pipe being secured together in a manner that the interior of the pipe communicates with the chamber and the relief valve and the liquid flow control valve communicate with the chamber in order to accomplish the association;

h. a fixed lower element and a movable vertically elongated upper element, the lower element containing the chamber and being fixedly secured to the top end of the pipe and top end of the conduit, the upper element containing the gas flow control valve, the liquid flow control valve being formed by cooperation between mating portions of the upper element and the lower element; and

i. wherein the lower element includes an integral tubular valve housing with a hollow interior which housing is surrounded by the chamber, connected to the top end of the conduit, and contains a needle-nose float body which is free to move therein, the housing cooperating with a

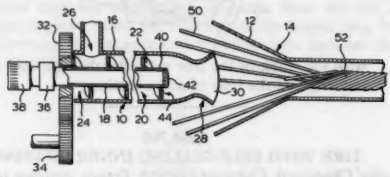
tubular nipple on the upper element and the float body to form the check valve.

4,206,790

POWDER EJECTION NOZZLE FOR STRANDER

Jörg-Hein Walling, St. Hubert, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed May 2, 1978, Ser. No. 902,158
Int. Cl.[2] H01B *13/06*
U.S. Cl. 141—250 **14 Claims**



1. In apparatus for filling the interstices of a multi-stranded cable with powder in which a plurality of strands are fed into a closing die having an outwardly flaring inlet wall, a device comprising:

an outer tubular housing having a free end;

an inner tube having a free end and being concentric with the housing, the inner tube being spaced therefrom to form with the housing an annular chamber having an inlet for receiving powder and an outlet end;

means to move powder along the chamber to the outlet end thereof; and

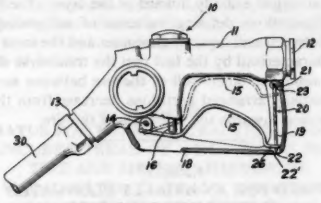
means to deliver air under pressure to the outlet end of the chamber whereby powder moved along the chamber is dispersed as a cloud from the outlet end thereof, said air delivery means comprising longitudinal passage means located within the outer housing, the outlet end of the chamber being locatable within the inlet wall of the closing die and spaced therefrom.

4,206,791

FLUID DISPENSING NOZZLE

Allen M. Bower, Conneaut, Ohio, assignor to Emco Wheaton, Inc., Conneaut, Ohio

Filed May 18, 1977, Ser. No. 798,023
Int. Cl.[2] B65B *3/04*
U.S. Cl. 141—392 **1 Claim**



1. A dispensing nozzle for filling a container comprising,

a nozzle body having an inlet and an outlet,

valve means for controlling the flow of fluid from said inlet to said outlet,

a lever connected to said valve means for moving said valve means to open position,

a handle on said lever,

resilient means on said body urging said valve means to closed position,

a locator having upwardly facing protuberances thereon supported on said nozzle body and disposed laterally of said lever,

said lever having a sear on the distal end thereof adapted to rest on said protuberances when said lever is moved to move said valve to open position,

said protuberances each having a top surface thereon inclined downward and towards said lever at an angle of approximately 22°,

said angle being sufficient to provide a lateral force component on said lever sufficient to overcome the force of friction due to the reaction of said resilient means urging said valve means to closed position whereby an operator can manually move said valve to open position with said lever and then move said lever laterally onto said inclined surface whereby the frictional force of said lever on said inclined surface supplies a part of the force necessary to hold lever from sliding off said surface holding said valve in said open position and said lever will slide laterally from said inclined surface when no manual force supplementing said frictional force on said lever is provided,

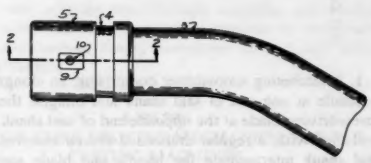
allowing resilient means to close said valve.

4,206,792

GASOLINE NOZZLE ADAPTORS

Benjamin J. Butera, MRC Box 43E, Bangor, Me. 04401

Filed Jul. 26, 1978, Ser. No. 928,082
Int. Cl.[2] B65B *3/04*; F16L *57/00*
U.S. Cl. 141—392 **1 Claim**



1. An adaptor to prevent the insertion of a leaded gasoline nozzle into filler pipes intended for unleaded gasoline comprising a tubular housing with an inner diameter sized to be forced over the end of the nozzle and an outer diameter too large to be inserted into filler pipes intended for unleaded gasoline, said tubular housing having at least one annular weakened portion and at least one internal tooth incompassing less than 360° of arc, said annular weakened portion distorting when the adaptor is forced onto the end of the gasoline nozzle and forcing the internal teeth to grip the nozzle preventing removal of the adaptor.

4,206,793

PROCESS FOR IMPROVING THE IMPREGNABILITY OF WOOD

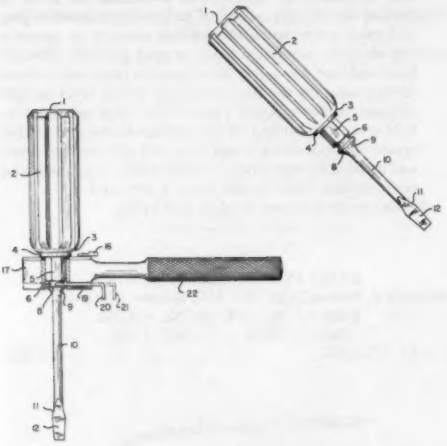
Thorwald Kipp, Bad Oeynhausen, Fed. Rep. of Germany, assignor to Eisenwerk Weserhütte AG, Fed. Rep. of Germany

Filed Mar. 30, 1978, Ser. No. 891,851
Claims priority, application Fed. Rep. of Germany, Mar. 30, 1977, 2714010
Int. Cl.[2] B23B *39/16*
U.S. Cl. 144—325 **2 Claims**

1. In the process for improving the impregnability of wood by forming impregnation orifices therein prior to an impregnation procedure by means of solid, sharp, circular needles with smooth surfaces, rotating about their central axes, and which are guided essentially perpendicularly to the surface of the wood, without thereby causing chipping or spintering,

the improvement which comprises harmonizing and maintaining an essentially constant ratio of the peripheral speed of the needles to the speed of advance with which they drive into the wood, said ratio being between the values of 2 and 4, whereby said impregnation orifices remain open in the cooled condition of the plastically deformed parts of the wood.

4,206,794
RATCHET DRIVER
William C. Reese, R.D. #1, Box 396 B, Newville, Pa. 17241
Filed Nov. 6, 1978, Ser. No. 950,439
Int. Cl.[2] B25G 1/00
U.S. Cl. 145—75 3 Claims



1. A ratcheting screwdriver comprising: an elongate shank, a handle at one end of said shank and integral therewith, a screwdriving blade at the opposite end of said shank and integral therewith, a regular multisided driven receiver body on said shank intermediate the handle and blade and integral therewith, stop means on the driven receiver body remote from said blade, an annular groove in said receiver body at the end thereof remote from the stop means, a tapering ramp means on the receiver body extending from said annular groove in the direction of said blade, an elongate handle having a ratchet wheel at one end with an opening of substantially the same size and shape as the receiver body and removably receiving said receiver body therein, reversible ratchet drive means between said handle and ratchet wheel, said receiver body and opening in the ratchet wheel having cross section greater than the largest blade to be used in said handle, and resilient clip means on said handle removably and rotatably engaging in said annular groove when the receiver body is fully engaged in said opening in the ratchet wheel.

4,206,795
STORED COLLAPSIBLE BAG FOR EXTENSION ABOUT A TREE FOR DISPOSAL OF THE TREE
Michael E. Regan, 4006 Girard Ave. N., Minneapolis, Minn. 55412
Filed Apr. 2, 1979, Ser. No. 26,092
Int. Cl.[2] B65D 85/70
U.S. Cl. 150—52 R 3 Claims

1. A stored collapsible bag for extension about a tree for disposal of the tree comprising:

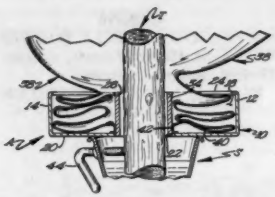
(a) a bag having a hole in the bottom thereof

(b) a container having a hole in the bottom thereof and through which the trunk of a tree can be extended,

(c) means mounting said bag in said container with the hole of the bag in alignment with the hole in the bottom of the container,

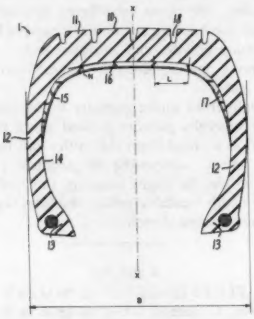
(d) means maintaining said bag in said container in compressed form, and

(e) means for releasing said maintaining means to allow said bag to be extended from said container and about a tree



with the trunk of the tree extended through said hole of said bag and the hole of said container.

4,206,796
TIRE WITH SELF-SEALING INNER COATING
André Chemizard, Clermont-Ferrand, France, assignor to Compagnie Generale des Etablissements Michelin, Clermont-Ferrand, France
Filed Mar. 7, 1978, Ser. No. 884,232
Claims priority, application France, Mar. 8, 1977, 77 07038
Int. Cl.[2] B60C 19/12
U.S. Cl. 152—347 8 Claims



1. A tire having a tread, sidewalls and an inner wall, said inner wall having, at least over the portion corresponding to the width of the tread, a layer of a self-sealing agent, a layer of elastomer arranged radially inward of the layer of self-sealing agent and partitions defining volumes of self-sealing agent arranged between said layer of elastomer and the inner wall of the tire, characterized by the fact that the transverse distances measured along the inner wall of the tire between successive circumferentially arranged partitions decrease from the tread in the direction towards the sidewalls of the tire.

4,206,797
GUARD FOR AN AXIALLY ELONGATED FLEXIBLE-WALLED TIRE
John G. Holland, Sr., Houston, Tex., assignor to Rolligon Corporation, Stafford, Tex.
Filed Apr. 19, 1976, Ser. No. 678,110
Int. Cl.[2] B60C 13/00; B60B 25/04
U.S. Cl. 152—353 R 1 Claim

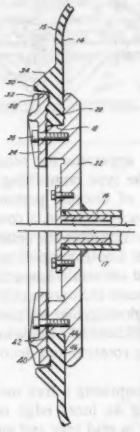
1. In a wheel assembly for use in an off-the-road vehicle having a load sustaining structure, a tire having an axially elongated, flexible sidewall low pressure ground contacting tire having a width greater than its diameter and having an opening at each end and a bead section surrounding each opening, axle means positioned coaxially in said tire for connection to and supporting the load sustaining structure of said vehicle, a wheel flange connected to each end of the vehicle

axle means and engaging the inside of each bead section, and a keeper ring releasably connected to each flange engaging the outside of each of said bead sections, the improvement comprising,

said bead sections having a thickness greater than the flexible sidewalls of the tire,

coacting ridges and grooves between each bead section and its mating wheel flange and the keeper ring for securely holding the bead sections between the wheel flanges and the keeper rings,

said tire including an integral annular guard on each end of the tire adjacent to and surrounding the outer edge of the keeper ring and projecting outwardly from the tire a distance greater than the thickness of the keeper ring for preventing the engagement of obstructions between the keeper ring and the tire,



each of said guards surrounding and adjacent to but spaced from a keeper ring for reinforcing the ends of the tire, and spaced from the outer periphery of the tire for allowing the ends of the tire to be flexible,

each of said guards on the side adjacent the opening including a sloping surface extending from the ends of the tires outwardly and away from the opening for allowing the flexible sidewalls of the tire to flex without folding, and

each of said guards on the side away from the opening including a sloping deflecting surface extending from the ends of the tires outwardly and towards the tire axis for deflecting any obstructions outwardly from the ends of the tire and the keeper rings and preventing damage to the ends of the tire.

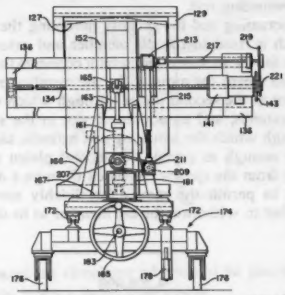
4,206,798

APPARATUS FOR FORMING TRACTION GROOVES IN THE UNCURED TREAD OF A HEAVY OFF-HIGHWAY TIRE AND METHOD THEREFORE

Gilbert W. Ray, and Max D. Brinkley, both of North Canton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jun. 16, 1978, Ser. No. 916,316
Int. Cl.[2] B29H *21/08*
U.S. Cl. 157—13 **7 Claims**

1. An apparatus for forming grooves in a tire tread comprising a grooving tool having a cutting edge, a frame disposable adjacent said tire, first means mounted on said frame for moving said grooving tool transversely in the tread of a tire in accordance with a predetermined non-linear profile, second means on said frame mounting said tool for rotation, and third means coordinated with the first means for varying the orientation of said tool in response to changes in slope of said profile as said tool is moved transversely of the tire, said third means comprising template means defining a contour coordinated with said predetermined profile, follower means carried in said first means for sensing said contour and comprising a servovalve having an actuating plunger engaging said contour, linking means connecting said follower means with said second means for varying the angular orientation of said tool to main-



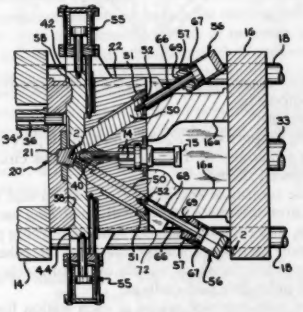
tain its cutting edge normal to its direction of movement by said first means and including a fluid power cylinder operable in response to said valve, and gear means operatively connected to said cylinder and drivingly engaging said second means to rotate said second means in response to changes in slope of said contour during movement of said tool transversely of the tire.

4,206,799

OBLIQUE CORE LOCKING MECHANISM FOR DIE CASTING MACHINES

John W. McDonald, 3664 Indian Rd., Toledo, Ohio 43606

Filed Dec. 11, 1978, Ser. No. 967,970
Int. Cl.[2] B22D *17/26*
U.S. Cl. 164—341 **4 Claims**



1. A die casting machine comprising a stationary platen, an ejector die block which when in engagement with the stationary platen forms a closed die cavity, means for moving the ejector die block toward and away from the stationary platen, and a die member slidably mounted in the ejector die block for movement in a direction at an acute angle to the direction of movement of the block, wherein the improvement comprises:

(a) a substantially planar rear surface on the ejector die block which is perpendicular to the direction of movement of the block,

(b) a substantially planar surface on the rear end of the slidable die member, which surface is perpendicular to the direction of movement of the ejector die block,

(c) a second platen which is mounted for movement in the

same direction as the ejector die block and has a front surface which is engageable with the planar rear surfaces of the ejector die block and slidable die member for locking them in their die-closed positions,

(d) a mounting rod fixed to the ejector die block and extending rearward from the ejector die block,

(e) means for slidably moving the die member relative to the ejector die block, said means being mounted on the end of the mounting rod,

(f) an actuating rod for slidably mounting the die member, which is fixed to the die member and extends rearward from the die member, and which connects the die member to said means for moving the die member, and

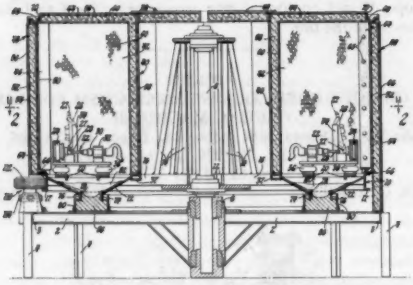
(g) a slot in the second platen through which the mounting rod extends, and an additional slot in the second platen through which the actuating rod extends, said slots being wide enough to permit the second platen to be moved away from the ejector die block through a distance sufficient to permit the means for slidably moving the die member to withdraw the die member to its die-open position.

4,206,800

ROTARY ACOUSTIC SAND-CORE SHAKEOUT

Kenneth J. Pol, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 5, 1979, Ser. No. 9,308
Int. Cl.[2] B22D *29/00*
U.S. Cl. 164—401 **5 Claims**



1. Shakeout apparatus for removing sand-cores from metal castings comprising:

support means;

a turntable supported for rotation on said support means and having a plurality of discrete work stations circumferentially spaced thereon;

a rotatable acoustical enclosure mounted on said turntable for rotation therewith and partially enclosing each of said stations, said enclosure having sound-absorbing partitions separating each work station one from the other and an access opening facing outwardly of the turntable for loading and unloading said castings;

percussive core removal means at each station for disintegrating the core and shaking the sand from the casting;

a stationary acoustical enclosure on said support means and circumscribing said rotatable acoustical enclosure, said stationary enclosure being in sliding, sound-sealing engagement with said rotatable enclosure such as to attentuate such sound generated at each station as might otherwise escape from said access opening;

an access port in said stationary acoustical enclosure to permit access to each said station through their respective access openings;

drive means for rotating said turntable and rotatable enclosure around within said stationary enclosure so as to sequentially align said access openings with said access port for loading and unloading of said castings; and

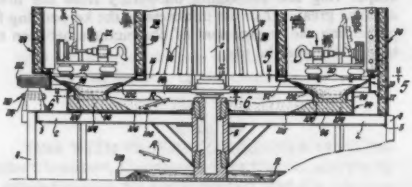
control means for actuating said core removal means only while said access openings are out of alignment with said access port and are in transit from and to said access port.

4,206,801

SAND-SEAL FOR ROTARY ACOUSTIC SAND-CORE SHAKEOUT

David R. Clarke, Bloomington, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 23, 1979, Ser. No. 14,485
Int. Cl.[2] B22D *29/00*
U.S. Cl. 164—401 **1 Claim**



1. In a shakeout apparatus for removing sand-cores from metal castings of the type comprising essentially a turntable bearing a plurality of discrete percussive decoring stations circumferentially spaced thereon, a rotatable acoustical enclosure mounted on the turntable for rotation within a stationary acoustical enclosure, a bottom-opening, sand-collecting chute depending from said turntable beneath each of said stations, and a receptable beneath the openings in said chutes for receiving sand from said openings and maintaining a bed of said sand therein at a level sufficient to engage and acoustically seal off said openings during rotation and decoring, the improvement comprising:

said receptacle comprising a tray including a sand-supporting shelf having an inner edge defining a substantially central opening in said tray and an upstanding rim on its outer periphery, said rim being located outboard said chute openings and extending sufficiently above said shelf to maintain said sand level thereon while preventing sand spillage over said rim during said rotation, and said inner edge being located sufficiently inboard said chute openings as to maintain said sand level yet permit ready removal through said central opening of such debris as might enter said bed from said chute openings.

4,206,802

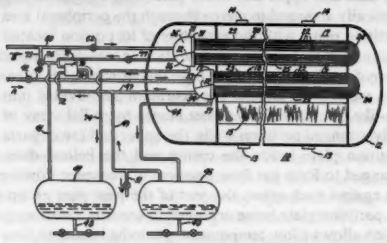
MOISTURE SEPARATOR REHEATER WITH THERMODYNAMICALLY ENHANCED MEANS FOR SUBSTANTIALLY ELIMINATING CONDENSATE SUBCOOLING

William G. Reed, Portland; Jack S. Mazer, South Portland, and Russell L. Shade, Jr., Cape Elizabeth, all of Me., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,674
Int. Cl.[2] F28B *9/02*; F22G *1/00*; F28F *9/22*; F28D *7/06*
U.S. Cl. 165—1 **15 Claims**

1. The method of substantially eliminating condensate subcooling within the tubes of a first stage reheater of a tube and shell reheater wherein shellside steam is reheated by passing in heat-exchange relationship with tubes of a first stage and a second stage reheater each containing saturated tubeside steam, said second stage reheater having an input of saturated steam which is at higher pressure than that of the saturated steam which is input to said first reheater, which method comprises; supplying exhausted scavenging steam from said first reheater to a low-pressure input of a high differential pressure pumping means: supplying exhausted scavenging steam from said second reheater to said high differential pressure pumping means; isentropically expanding said second stage exhausted scavenging steam in said pumping means and

entraining the exhausted scavenging steam of said first stage reheater therein; and supplying the mixture of said reheater



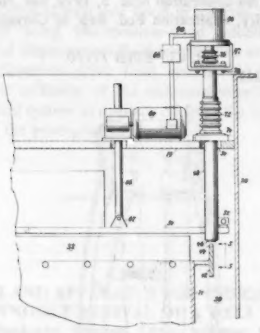
exhausts to the input header of said first stage reheater to substantially eliminate condensate subcooling in the tubes of said first stage tube bundle.

4,206,803

ROTOR TURNDOWN SENSOR AND CONTROL

Harlan E. Finnemore, Wellsville, and Roderick J. Baker, Belmont, both of N.Y., assignors to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 26, 1978, Ser. No. 973,217
Int. Cl.[2] F28D *19/00*
U.S. Cl. 165—9 6 Claims



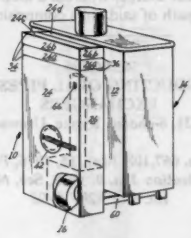
1. Rotary regenerative heat exchange apparatus having a central rotor post, a rotor shell concentrically around said rotor post to provide an annular rotor therebetween, a mass of heat absorbent material carried by said rotor, a rotor housing having apertured end plates at opposite ends of the rotor adapted to direct a heating fluid and a fluid to be heated to and through the rotor, means for rotating the rotor about its axis to align the heat absorbent material of the rotor with the heating fluid and the fluid to be heated, a sector plate intermediate an end of the rotor and an end plate adapted to separate the heating fluid from the fluid to be heated, means supporting the inboard end of the sector plate, an axial projection carried by the end edge of the rotor, an actuating means connected to the outboard end of the sector plate to drive it axially toward said projection, means for motivating the actuating means, a limit switch actuated by axial movement of said projection, and an axially disposed sensor rod intermediate the projection and the limit switch adapted to actuate the switch in response to axial movement of the projection.

4,206,804

HEATED AIR CIRCULATOR

Edward L. Scholtes, and Herbert N. Van Cleave, both of Pendelton, Oreg. 97801

Filed Aug. 7, 1978, Ser. No. 931,557
Int. Cl.[2] F28F *7/00*
U.S. Cl. 165—40 7 Claims



7. A heated air circulator adapted to be placed adjacent a radiant-type heating stove, comprising

a housing including wall means defining a chamber therein, said wall means comprising a sheet of metal having a central section forming a back wall and opposed side margins folded inwardly therefrom to form a pair of opposed upright side walls, with upper portions of said central section and said side margins being unjoined along their adjacent edges,

means defining a plurality of spaced-apart, transverse fold lines on said back and side walls, permitting portions of said walls, where the same are unjoined, to be folded over to form a chamber top at a height conforming to the height of said stove,

intake and exhaust openings defined in said wall means, permitting flow of air through said chamber,

a damper plate mounted on said wall means adjacent said intake opening for movement between open and closed positions, wherein said plate controls flow of air through said intake opening,

temperature-responsive means for moving said plate toward its open and closed positions in response to temperature variations within chamber, said temperature-responsive means including a temperature-responsive spring mounted within said chamber and connected to said plate to bias said plate toward its closed position, and a second spring mounted outside said chamber and attached to said plate to bias said plate toward an open position, and

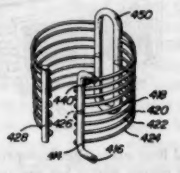
a motor-driven fan for forcing heated air from said chamber through said exhaust opening.

4,206,805

HEAT RECOVERY UNIT

Ralph R. Beckett, 1410 2nd Ave., Yuma, Ariz. 85364

Filed Mar. 30, 1978, Ser. No. 891,731
Int. Cl.[2] F28F *9/22*
U.S. Cl. 165—80 C 5 Claims



1. Heat recovery apparatus comprising, in combination, a

heat source and encircling inner heat absorber in mechanical and thermal contact with said heat source, an assembly of a plurality of encircling heat exchange coils surrounding and in mechanical and thermal contact with said inner heat absorber, said coils including inlet and outlet means for circulation of a heat exchange fluid, and an outer shield surrounding said assembly, said outer shield having means for adjustably tightening and frictionally holding said assembly and said inner heat absorber to said heat source, wherein a loop manifold is interposed within the path of said coils comprising said assembly.

4,206,806

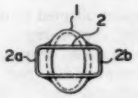
HEAT-CONDUCTING OVAL PIPES IN HEAT EXCHANGERS

Akira Togashi, 14-31, 6-chome, Ryoke, Urawa-shi, Saitama-ken, Japan

Division of Ser. No. 667,108, Mar. 15, 1976, Pat. No. 4,175,308. This application Jan. 9, 1979, Ser. No. 2,123

Int. Cl.[2] F28F *9/02*

U.S. Cl. 165—82 **20 Claims**



1. A heat exchanger comprising radially outwardly deformed first and second opposite portions of ends of a curvilinear oval tube and transversely radially inwardly deformed second and third opposite portions of the ends thereby forming rectangular ends, and first and second opposite relatively small parallel faces extended outward beyond the curvilinear portion of the tube formed from the first and second portions, second and third opposite and elongated faces formed from the second and third portions, and connected the relatively short faces, the elongated faces being parallel to each other and being spaced apart a distance less than a diametrical dimension of the curved tube, and the ends being surrounded with a thermal strain-compensating frame made of the same material as the pipes.

4,206,807

CYLINDRICAL HEAT EXCHANGER USING HEAT PIPES

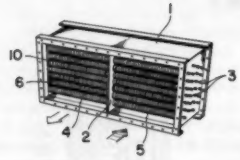
Tatsuya Koizumi, Tokyo; Shuichi Furuya; Koji Matsumoto, both of Yokohama, and Kensuke Karasawa, Machida, all of Japan, assignors to The Furukawa Electric Company Ltd., Tokyo, Japan

Filed Feb. 3, 1978, Ser. No. 875,092

Claims priority, application Japan, Jan. 31, 1977, 52-10200[U]; Jun. 2, 1977, 52-71954[U]; Aug. 17, 1977, 52-98335; Aug. 17, 1977, 52-98336; Aug. 17, 1977, 52-98337; Dec. 2, 1977, 52-144861

Int. Cl.[2] F28D *15/00*

U.S. Cl. 165—105 **7 Claims**



1. A cylindrical heat exchanger comprising a cylindrical or polygonal tubular casing which has openings in or around the middle parts of both the upper and lower sides and in its circumferential side; a helical duct which swells in a flat helical form on the circumferential side to form a circumferential wall of the casing with the end of its helical form left open; a transverse partition plate which divides the insides of the casing and the duct into upper and lower parts; and a group of heat pipes vertically arranged to pierce through the peripheral area of the partition plate, with the exception of its portion located in the duct and in an annular configuration as viewed in a plan view thereof, said group of heat pipes being arranged, as seen in a plan view, in an annular configuration and divided into many arc-like or chord-like segment blocks by radial array of vertically arranged partition walls; the upper and lower parts of the partition plate inside the casing and the helical duct being arranged to form gas flow passages in a counter flowing manner against each other, the part of the heat pipe group above the partition plate being arranged to serve as radiating portion which allows a low temperature gas to be heated to flow there and to come into contact therewith while the part of the heat pipe group below the partition plate being arranged to serve as heat receiving portion which allows a high temperature gas to flow there thus coming into contact therewith.

4,206,808

SAFETY CENTERING BASKET

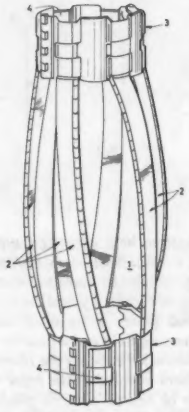
Günter Kreft, Hermann-Löns-Weg 5, D-4520 Melle 1, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 844,993, Oct. 25, 1977, Pat. No. 4,143,713. This application Mar. 5, 1979, Ser. No. 17,654

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809181

Int. Cl.[2] E21B *17/10*

U.S. Cl. 166—241 **9 Claims**



1. In a safety centering basket for use with the tubing of mining bores, oilfield bores and the like, of the kind having a number of resilient flat steel springs each engaged endwise in openings of respective end steel rings each formed of two half shells with hinges, the springs being secured to the end rings, the improvement that each flat steel spring is formed of a plurality of spring rods arranged in adjacent positions and coupled together to form a unit, the unit being clad in a layer of heat stable protective material.

4,206,809

SLUG DESIGN IN MICELLAR-POLYMER FLOODING

Stanley C. Jones, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Nov. 2, 1978, Ser. No. 956,936
Int. Cl.[2] E21B *43/22, 47/00*
U.S. Cl. 166—252 32 Claims

12. In a process of conducting oil recovery operations in an oil-bearing reservoir having injection means and production means in fluid communication with said reservoir wherein the reservoir is evaluated taking into account the characteristics of the reservoir; comprising the composition of the crude oil and the reservoir water and the temperature of the reservoir; to determine its suitability for oil recovery operations using micellar dispersion as the oil-displacing medium and the reservoir fluids are characterized and a micellar dispersion-drive fluid system is designed using laboratory-sized oil recovery floods in material simulating the reservoir with micellar dispersions and drive fluid slugs of appropriate size to determine the optimum micellar dispersion for flooding the reservoir, the steps comprising:

(a) formulating a plurality of micellar dispersion slugs from components suitable for oil displacement in the reservoir to be flooded;

(b) conducting at least one flood in material simulating the reservoir using a very large slug of micellar dispersion of each micellar dispersion of a suite of suitable micellar dispersions from which a micellar dispersion is to be selected to determine the better oil displacing micellar dispersion formulations,

(c) conducting at least one flood using small slugs of those better oil displacing formulations and drive fluid in material simulating the reservoir to determine the oil-recovery-to-slug-size ratio of each of the micellar dispersions tested;

(d) conducting at least one flood in material simulating the reservoir using intermediate-sized micellar dispersion slugs and displacement fluid to establish an optimum micellar dispersion-drive fluid system. (e) injecting into reservoir sufficient of the optimum micellar dispersion-drive fluid system to displace oil from the injection means toward the production means.

4,206,810

METHOD AND APPARATUS FOR INDICATING THE DOWNHOLE ARRIVAL OF A WELL TOOL

Bruce A. Blackman, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 20, 1978, Ser. No. 917,222
Int. Cl.[2] E21B *7/12*
U.S. Cl. 166—336 8 Claims

1. An oil well apparatus for indicating the passing of an oil well tool at a predetermined point in the well bore comprising:

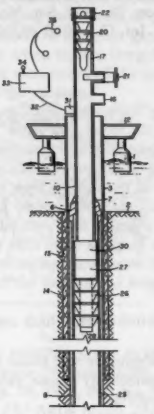
an acoustic transmitting apparatus locatable at a predetermined point in the well bore for sensing the passing of the oil well tool and for transmitting an acoustic signal responsive to said sensing of the oil well tool;

acoustic conducting means extending from said acoustic transmitting apparatus to the surface for conducting said acoustic signal from said acoustic transmitting apparatus to the surface;

indicating means acoustically connected to said acoustic conducting means for sensing and indicating said acoustic signal received from said acoustic conducting means;

oscillator means for producing acoustic signals at a first normal operating frequency; and

oscillator control means responsive to the sensing of said passing oil well tool for controlling said oscillator means subsequent to the passing of said oil well tool at a second



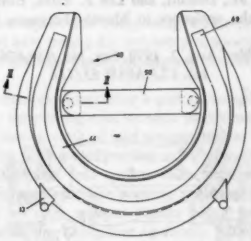
frequency for producing acoustic signals at said second frequency subsequent to the passing of said oil well tool.

4,206,811

HOOF COVERING

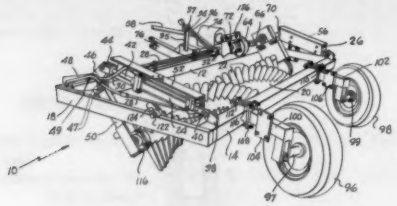
Helmuth Dallmer, No. 25, Wiebelsheidestrasse, 5760 Arnsberg 1, Fed. Rep. of Germany

Filed Aug. 26, 1977, Ser. No. 828,066
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1976, 2638970; Apr. 16, 1977, 2716968
Int. Cl.[2] A01L *3/00, 5/00*
U.S. Cl. 168—4 10 Claims



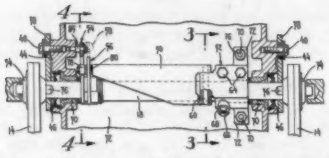
1. A hoof covering adapted to be adhesively bonded directly to the hoof of a horse comprising a horseshoe-shaped plastic body made integrally of deformable wear-resistant plastic material and having a generally acute-angled cross section, said plastic body having a lower side with a flat upper surface which serves as a support for a hoof of a horse, an upwardly extending side wall capable of being bent to conform to the shape of the side surface of said hoof, a tissue bonded to at least a portion of the interior of said side wall, said tissue comprising an adhesive accepting material, adhesive means for bonding said tissue directly to said hoof, a plurality of projections formed on the interior surface of said side wall and penetrating said adhesive means to enhance said bonding to said hoof, said lower side of said plastic body defining a horseshoe-shaped dovetailed groove opening into a surface thereof and a horseshoe-shaped spring steel band preformed to the particular shape of said hoof to be covered and laterally press-fitted into and retained in said dovetailed groove to conform said plastic body to the preformed shape of said steel band.

4,206,812
ROTARY ROCK WINDROWER
Floyd W. Viel, P.O. Box 632, Billings, Mont. 59103
Filed Aug. 26, 1977, Ser. No. 828,214
Int. Cl.[2] A01B *43/00*
U.S. Cl. 171—63 16 Claims



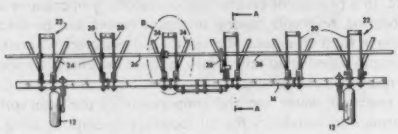
1. A rotary rock windrower, which comprises:
a frame assembly;
a reel rotatingly mounted in said frame assembly and having a plurality of substantially planar, elongated teeth extending radially therefrom;
means for connecting said frame assembly to a towing vehicle so as to dispose said reel at a non-perpendicular angle with respect to the draft direction of said towing vehicle;
said plurality of teeth being connected to said reel in such a fashion that when the teeth are positioned adjacent the ground the planes of said teeth are substantially parallel with said draft direction of said towing vehicle.

4,206,813
DRAFT SENSING APPARATUS
Otto Mueller, Jr., Detroit, and Lee E. Elfes, Bloomfield Hills, both of Mich., assignors to Massey-Ferguson Inc., Detroit, Mich.
Filed Aug. 2, 1978, Ser. No. 930,476
Int. Cl.[2] A01B *63/112*
U.S. Cl. 172—7 8 Claims



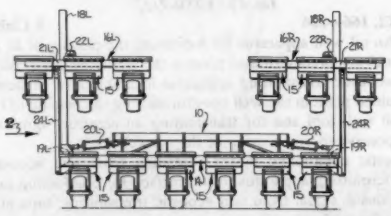
1. A draft sensing apparatus comprising: a tractor housing having spaced apart fulcrum supports; an elongated bendable shaft mounted in the spaced apart fulcrum supports; draft members connected to said shaft at points spaced outwardly of said tractor housing and operable to cause said shaft to bend when transmitting forces to said shaft; an elongated sensing arm assembly having a free end and another end which is mounted on said elongated bendable shaft; and means for measuring the relative movement of said free end of the sensing arm assembly; said sensing arm assembly including means acting in cooperation with the measuring means to insure that the free end of the sensing arm assembly will move in a prescribed path in response only to the bending of the shaft caused by changes in the draft forces which are to be measured and being free of response to the bending of the shaft caused by changes in forces other than the draft forces which are to be measured.

4,206,814
KNIFE SLED CULTIVATOR WITH WEEDER BAR
Clifton J. Isaacs, Box 15, Rte. 2, Turpin, Okla. 73950
Filed Aug. 21, 1978, Ser. No. 935,249
Int. Cl.[2] A01B *39/19*
U.S. Cl. 172—44 3 Claims



1. A farm implement useful to cultivate field crops and to prepare soil comprising:
(a) a main frame;
(b) at least two carriage wheels for supporting the frame;
(c) a plurality of brackets mounted in pairs on the frame, each pair of brackets defining a sled;
(d) a plurality of knives mounted on each sled in a generally horizontal plane;
(e) a weeder bar rotatably supported by the brackets; and
(f) a hydraulic motor means mounted on the frame for driving the weeder bar in a counter clockwise direction as the implement is moved in a direction whereby the carriage wheels rotate in a clockwise direction; said weeder bar is positioned above said knives; said knives protrude and are mounted on each sled in such a manner whereby protruding knives from adjacent sleds do not overlap to prevent the balling up of weeds, trash, or the like, between knives from adjacent sleds; said sled comprises two generally U-shaped brackets, each bracket having a base, a frame attachment arm, and a free arm, said frame attachment arm attaching to said frame; at least one cross member connecting to the free arm of each U-shaped bracket; at least one diagonal connecting support member connecting to the base and frame attachment arm of each U-shaped bracket; each U-shaped bracket includes at least one knife blade connected to the base thereof such as to be generally parallel to the ground and diverge with respect to the base; said weeder bar being rotatably supported by the base of each bracket.

4,206,815
TOOL BAR ARRANGEMENT
John C. Hatcher, Charlotte, N.C., assignor to Cole Manufacturing Company, Charlotte, N.C.
Filed Oct. 10, 1978, Ser. No. 949,437
Int. Cl.[2] A01B *73/00*
U.S. Cl. 172—311 2 Claims



2. In an apparatus for mounting agricultural implements and having a substantially horizontal frame adapted to be propelled over the ground by a tractor or the like, the combination therewith of an elongate, laterally extending main tool bar carried by said frame and extending substantially horizontally for mounting at least one first implement thereon, and second-

ary tool bar means for supporting at least one second implement to one side of said frame and for alternatively displacing said second implement to a position above said main tool bar to foreshorten the width of the apparatus for transport thereof from place to place without effecting any substantial change in the attitude of said second implement, said secondary tool bar means comprising

an elongate lever including an inboard end and an outboard end,

means pivotally connecting said inboard end of said lever to an adjacent outer end of said main tool bar for pivotal movement on a substantially horizontal, forwardly and rearwardly extending axis, said lever being adapted to be pivoted about said axis upwardly and downwardly between a substantially horizontal laterally extended position aligned with said main tool bar and a substantially upright retracted position relative to said main tool bar,

at least one elongate outboard tool bar pivotally mounted at a medial portion thereof on said lever and being positioned rearwardly of said lever, said outboard tool bar being adapted to support said second implement thereon in a substantially horizontal position laterally outwardly of said main tool bar when said lever occupies its said laterally extended position, and

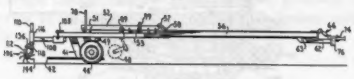
a link having one end portion pivotally connected to said main tool bar at a point beneath and adjacent to said outer end of said main tool bar and having its other end portion pivotally connected to said outboard tool bar at a point outwardly of that point at which said outboard tool bar is pivotally connected to said lever so as to maintain said outboard tool bar substantially horizontal during movement of said lever means relative to said main tool bar.

4,206,816

FOLDING FLEXIBLE UNDERCUTTER PLOW

Raymond W. Richardson; Robert E. Burda, and John C. Crumrine, all of Cawker City, Kans., assignors to Richardson Manufacturing Company, Inc., Cawker City, Kans.

Division of Ser. No. 717,501, Aug. 24, 1976, Pat. No. 4,133,391.
This application Oct. 27, 1978, Ser. No. 955,376
Int. Cl.[2] A01B *21/04, 23/04, 73/00*
U.S. Cl. 172—311 **1 Claim**



1. In an articulated implement:

a plurality of relatively closely spaced gangs of treader wheels;

an articulated draft frame supporting said gangs for advancement over the ground in a forward direction as the frame is drawn, and including a plurality of side-by-side frame sections and hinge means swingably interconnecting each of said sections with an adjacent section and defining a fore and aft, generally horizontal axis at each connection thereof for relative movement of said sections between normal, generally horizontal, unfolded positions and folded, transport positions;

structure on said frame sections mounting each of said gangs for swinging movement about a transverse, generally horizontal axis, generally in said forward direction and in the opposite, rearward direction under the weight of the gang,

said structure including, for each gang, a pair of rearwardly extending booms on an adjacent pair of sections supporting a corresponding gang, a gang beam carried by said pair of booms and defining said transverse axis of the gang, and mounting means attaching said beam to said booms and permitting shifting of said beam relative to one of said booms longitudinally of the beam during folding and unfolding of said sections; and

means on each gang said structure for limiting said forward and rearward swinging movement of each gang, whereby to prevent the wheels of adjacent gangs from interfering with one another when terrain irregularities are encountered, and to limit movement of the gangs during folding and unfolding of the sections,

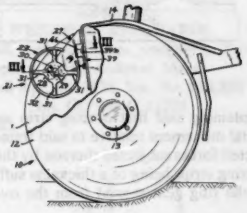
said limiting means including, for each gang, an arm on the gang swingable therewith and extending rearwardly therefrom, a member extending rearwardly from said mounting means, and a flexible link interconnecting said member and said arm and limited in length to stop said forward swinging movement of the gang when the link is pulled tight by the arm, said member and said arm being arranged to clear each other and pull the link tight to stop the gang upon swinging movement thereof in said rearward direction to the limit of the length of the link.

4,206,817

SCRAPER BLADE MECHANISM FOR DOUBLE DISC

Galen Bowerman, Dawson, N. Dak. 58428

Filed Sep. 18, 1978, Ser. No. 942,933
Int. Cl.[2] A01B *15/16, 23/06*
U.S. Cl. 172—559 **7 Claims**



1. A seed sowing device comprising a pair of cooperating disc blades and axle means for rotatably supporting such disc blades, each of said disc blades having an inwardly facing side; and

scraper mechanism comprising a pair of scraper blades and means for supporting said scraper blades with respect to said disc blades, each of said scraper blades comprising a hub portion, a ring-like portion and a plurality of radially extending spokes, said spokes interconnecting said hub portion and said ring-like portion, the ring-like portion of each one of such scraper blades being held in planar contact with the respective inwardly facing side of the adjacent disc blade, said scraper blade support means including spring means for releasably urging said scraper blades toward said disc blades.

4,206,818

WORK VEHICLE AND RING BEARING ARRANGEMENT THEREFOR

Joel M. Beckham; Gene B. Easterling; Reginald K. Ringel, all of Decatur, and Egon E. Wolff, Forsythe, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Continuation-in-part of Ser. No. 902,200, May 2, 1978, abandoned, which is a continuation of Ser. No. 778,652, Mar. 17, 1977, Pat. No. 4,099,577. This application Oct. 10, 1978, Ser. No. 949,834
The portion of the term of this patent subsequent to Jul. 11, 1995, has been disclaimed.
Int. Cl.[2] E02F *3/76*
U.S. Cl. 172—781 **6 Claims**

1. A work vehicle, comprising:

a draw bar frame having a plurality of recesses;

a work element;

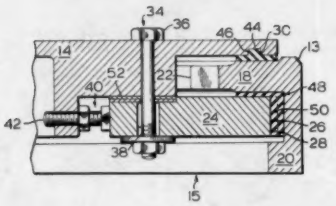
a ring gear having first and second legs and being of a general "L" cross sectional configuration and fixedly connected to the work element;

a plurality of shoes each having an end having at least one slot extending generally vertically along the end in the installed position with the shoe movably connected to the frame and the first ring gear leg positioned between the shoe and an overlaying frame portion;

first means for selectively movably and fixedly connecting the shoe to the frame;

second means for controllably moving the shoe toward and from the ring gear;

a plurality of first bearing strips positioned between and in load bearing contact with the first leg of the ring gear and the overlaying frame portion, each of said first bearing strips having at least one portion of a construction sufficient for generally vertically insertion into a respective recess, generally vertical removal from said recess, and



for maintaining said first bearing strip against generally horizontal movement relative to said frame in response to preselected forces subjected thereon by the ring gear, said first bearing strips being of a thickness sufficient for maintaining the ring gear spaced from the overlaying frame; and

a plurality of second bearing strips each being of a general "L" cross sectional configuration and positioned over an end portion of a respective shoe and between and in load carrying contact with said shoe and the first and second legs of the ring gear, each of said second bearing strips having at least one lug of a construction sufficient for insertion into a respective generally vertical shoe slot, removal from said slot, and for maintaining said second bearing strip against generally horizontal movement relative to said shoe in response to forces subjected thereon by the ring gear, said second bearing strip being of a size sufficient for maintaining the ring gear spaced from all portions of the shoe.

4,206,819

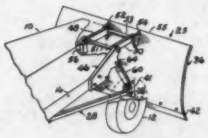
DUMPING BULLDOZING ASSEMBLY FOR A FARM TRACTOR

Alvin E. Ratzlaff, Orienta, Okla. 73765

Filed Jul. 26, 1978, Ser. No. 928,119

Int. Cl.² A01B 3/76

U.S. Cl. 172—801 **3 Claims**



1. A bulldozing assembly in combination with a row crop type farm tractor having a frame supported by pairs of forward and rearward wheels and having a drawbar, the improvement comprising:

a bulldozing blade transversely disposed forwardly of said tractor;

a pair of push rods extending longitudinally of said tractor between said wheels;

means pivotally connecting the respective end portions of said rods with said blade and said drawbar for vertical swinging movement of their forward end portions about a horizontal axis;

a pair of brace members connected with opposing sides of said frame and projecting upwardly and forwardly therefrom;

a pair of normally generally vertically disposed links extending between and pivotally connected, for vertical swinging movement, at their respective ends with the forward upper end portion of said braces and said blade; and,

a pair of hydraulic cylinders connected with said braces and said blade for lowering and raising said blade toward and away from the surface of the earth while simultaneously pivoting said pair of links forwardly to a generally horizontal position and automatically tilting the upper edge portion of said blade forwardly to a blade unloading position.

4,206,820

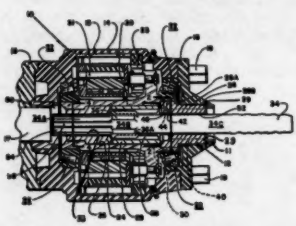
STRIKING BAR

Edward A. Bailey, Newport, and Louis H. LeBlanc, Jr., Claremont, both of N.H., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 722,920, Sep. 13, 1976. This application Dec. 27, 1977, Ser. No. 865,087

Int. Cl.² B25D 9/00

U.S. Cl. 173—105 **12 Claims**



1. In an impact tool means, a working member assembly comprising:

an elongated working member having at least a pair of axially aligned support portions and a rotary driver portion;

elongated bearing means adapted to be carried by such impact tool means and cooperable with said working member to supportingly engage said support portions of said working member;

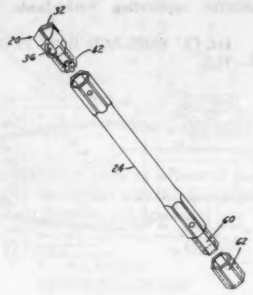
said bearing means including a pair of bearing portions with each of said bearing portions being formed to supportingly encompass a respective one of said pair of support portions for support of said working member in a manner to permit rotation thereof with respect to said bearing portions;

and one of said support portions of said working member having a transverse extent greater than the transverse extent of the other of said support portions and being cooperable with the said bearing portion which supportingly encompasses said other support portion to be moveable axially therethrough for removal and insertion of said working member from and into said bearing means.

4,206,821
ROOF DRILL AND DRILL ROD SYSTEM

Kenneth C. Emmerich, Lexington, Ky., assignor to Fansteel Inc., North Chicago, Ill.

Filed Sep. 8, 1978, Ser. No. 940,709
Int. Cl.[2] E21C 15/00
U.S. Cl. 175—321 3 Claims



1. In an apparatus for roof drilling and the like for operation without hand guidance which comprises a telescoping hollow, fluid cooled assembly of a drill bit, a middle extension steel, and a drive chuck, that improvement which comprises:

(a) a hollow middle extension steel having polygonal end portions with identical internal recesses at each end of polygonal cross-section, each end being adapted to receive a complemental shank of a drill bit,

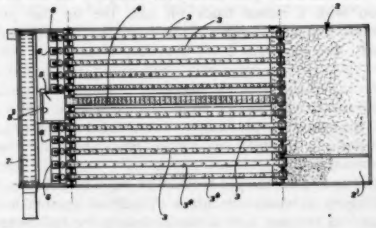
(b) a drive chuck in the form of a hollow cylinder with a polygonal interior passage to receive either end of said extension steel having a stop collar forming a shoulder at one end of the passage, and

(c) an adaptor assembly interposed between the inserted end of said middle extension steel and said drive chuck comprising a drive and reinforcing tube having a polygonal cross-section fitted into an internal recess at one end of said steel and extending therefrom, a chuck adaptor tube having an internal recess complemental to said drive tube extension to slideably receive said extension and an external shape complemental to and slideably received in the interior of said drive chuck and seated against said stop collar.

4,206,822
APPARATUS FOR THE EXACT WEIGHING OF MATERIAL IN LOTS OF MIXED-SIZE PIECES

Peppino Mazzucchelli, Via Roma 77, 20020 Barbaiana di Lainate (Milan), Italy

Filed Jul. 27, 1978, Ser. No. 928,523
Claims priority, application Italy, Jul. 28, 1977, 26270 A/77
Int. Cl.[2] G01G 19/04, 19/22
U.S. Cl. 177—25 6 Claims

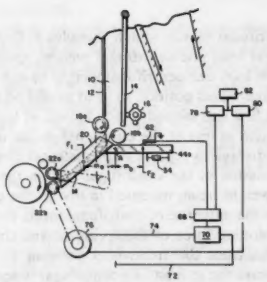


1. Apparatus for the exact weighing of materials, especially fruit and vegetables, in lots of mixed-size pieces, characterized in that it feeds a plurality of pieces to a plurality of scales, in that it carries out the weighing of one or more pieces on single scales, in that it calculates the sum of successive groups of weights read from differently selected scales, and the difference between the wanted draft and each of said sums in order to select the group of weights and hence of scales carrying pieces for a total weight differing from the wanted draft to a predetermined allowed extent, and in that it operates the unloading of the pieces from the selected scales, comprising means for feeding a plurality of pieces, of a total weight equal to a large fraction of the draft to be carried out, all together to a first common scale, and another plurality of pieces, of a total higher weight, one at a time to a corresponding plurality of single scales, the feeding to the common scales and, respectively, to the single scales, being carried out through separate means; means for weighing the group of pieces on the common scale and the single pieces on the single scales, means for calculating the sum of the first weight with successive groups of the second weights, differently selected, and the difference between the wanted draft and each of said sums, so as to select the single scales which, together with the common scale, carry a weight differing from the wanted draft to a predetermined allowed extent; and means for unloading the pieces from the common scale and from the selected single scales.

4,206,823
WEIGHING APPARATUS

Maynard J. Krull, Andover, Mass., assignor to Davis & Furber Machine Company, North Andover, Mass.

Filed Apr. 26, 1978, Ser. No. 900,330
Int. Cl.[2] G01G 11/08
U.S. Cl. 177—121 4 Claims



1. Apparatus for controlling the rate at which fibrous material is withdrawn from a supply chamber and fed to a carding machine, comprising:

a pair of compressor rolls located adjacent to an outlet of the supply chamber;

a pair of feeding rolls adjacent to the entry end of the carding machine, said feeding rolls being located at a level beneath that of said compressor rolls and being vertically offset therefrom;

a downwardly inclined chute extending between said compressor rolls and said feeding rolls;

drive means for rotatably driving said compressor rolls and said feeding rolls, said compressor rolls being arranged to form fibrous material exiting from the outlet of the supply chamber into a compressed fiber lap which is directed downwardly on said chute to said feeding rolls, said feeding rolls being arranged to direct said fiber lap into the carding machine;

means adjacent to the upper end of said chute for supporting said chute for pivotal movement about an axis extending transversely in relation to the path of movement of said fiber lap;

sensing means responsive to pivotal movement of said chute

for generating an electrical control signal representative of the weight of the fiber lap being conveyed on said chute; and,

control means responsive to said control signal for varying the speed of said drive means in order to maintain a predetermined feed rate for the fiber lap exiting from said feed rolls.

4,206,824
CENTRIFUGAL CLUTCH

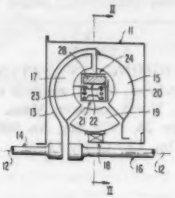
Rainer Klink, Kernen, Fed. Rep. of Germany, assignor to Deutsche Automobilgesellschaft mbH., Hanover, Fed. Rep. of Germany

Filed Sep. 28, 1978, Ser. No. 946,650

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1977, 2743595

Int. Cl.[2] B60K *17/10*

U.S. Cl. 180—65 R **32 Claims**



1. A centrifugal clutch which includes a first and second clutch half, at least one centrifugal weight, spring means for locking the at least one centrifugal weight to one of the clutch halves in a free-wheel position so as to permit relative rotation between the first and second clutch halves, at least one driver means provided in one of the clutch halves for driving the at least one centrifugal weight in two rotational directions about an axis of rotation of the centrifugal clutch, the at least one centrifugal weight being mounted in one of the clutch halves so that under the influence of centrifugal force, upon overcoming a pretensioning force of the spring means, the centrifugal weight moves from the free-wheel position to an engaged position wherein the at least one centrifugal weight is in mesh with both the driver means and in frictional contact with the second clutch half, characterized in that in the free-wheel position the centrifugal weight has a predetermined play in the two rotational directions relative to the driver means, the centrifugal weight is displaceable into intermediate positions in which is established a torque-transmitting connection between the clutch halves by way of a frictional contact, and in that the spring means are mounted on the centrifugal weight so as to exclusively hold the clutch halves in contact independently of the driver means in the intermediate positions.

31. A centrifugal clutch according to claim **1**, arranged in a vehicle having a driving motor constructed as a D.C. shunt motor, vehicle wheels, and a torque transfer train for coupling the driving motor with the vehicle wheels, characterized in that one of the clutch halves is coupled to the D.C. shunt motor, the D.C. shunt motor is operable so as to be cut down from a rated rpm to a reduced rpm during a braking operation, the other clutch half is connected to the vehicle wheels, and in that the driver means, in a transition range produced by a down-shifting in the braking operation, is between a torque curve of the D.C. shunt motor during an operation at the rated rpm and a torque curve of the motor when operated at a predetermined reduced rpm.

4,206,825
AGRICULTURAL TRACTOR WITH NARROW REAR BODY HAVING LIFTING DEVICE LINKS WHICH FUNCTION AS SCRAPERS FOR MUD OR THE LIKE ON THE REAR TIRES

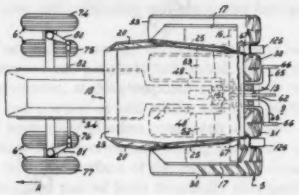
Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 653,514, Jan. 29, 1976, abandoned. This application Apr. 6, 1978, Ser. No. 894,153

Claims priority, application Netherlands, Jan. 30, 1975, 7501075

Int. Cl.[2] B60D *7/00*; B60K *23/00*

U.S. Cl. 180—77 S **7 Claims**



1. A tractor comprising an engine and front and rear ground wheels, the ground wheels including pneumatic tires, a lifting device being provided in the central region of the tractor between said rear ground wheels which includes a pair of links that each extend outwardly from said central region of the tractor to intercept planes which contain the side surfaces of said tires that are closest to said lifting device and extend in opposite directions laterally outwardly to sufficiently proximate the treads of said closest tires whereby they comprise effective scraper means to remove mud and the like from said closest tires, said planes being substantially parallel to the intended direction of forward travel of the tractor, said links each being an integral unitary continuously rigid structure and being provided at their respective outward ends with rearwardly extending coupling means for the attachment of implements, a platform being provided on which a driving seat is arranged, said driving seat for an operator seated thereon facing forward being located substantially above the axle of at least two of said rear ground wheels which are driven and at a level higher than said two rear ground wheels, upright pivot means supporting said seat above said platform whereby said seat is turnable so an operator can selectively face forwardly and rearwardly.

4,206,826
TRANSMISSION REMOTE SHIFT SYSTEM OF THE DISCONNECT TYPE FOR A CAB-OVER CHASSIS

Russell G. McMillen, and Noel E. Leitzman, both of Fort Wayne, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Nov. 20, 1978, Ser. No. 962,438

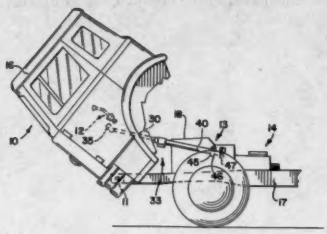
Int. Cl.[2] B60K *20/04*

U.S. Cl. 180—77 TC **5 Claims**

1. A break-away gear shift lever assembly for use in combination with a motor truck tilt cab, the tilt cab pivotally mounted along a forward transverse axes to a motor truck chassis, the gear shift lever assembly including a gear shift lever having a depending end, a ball-ended stub shaft mounted to the depending end, an angularly movable elongated telescopic control rod having an inner tube sleeved into an outer tube, the inner tube pivotally end connected to the tilt cab and the outer tube pivotally end connected to a gear shift transmission means, and a pot bracket mounted to one of the telescopic control rod tubes, the pot bracket having a funnel shaped hole converging downwardly into a cylindrical bearing hole, the cylindrical bearing hole accommodating the ball-ended stub shaft in the non-tilted position of the tilt cab, wherein the improvement comprises:

a conical compression spring sleeved over the ball-ended

stub shaft and having a depending end engaging a flange on the ball-ended stub shaft and an upright end engaging the tilt cab



maintaining the gear shift lever in a neutral position upon tilting of the tilt cab concurrent with the disengagement of the ball-ended stub shaft from the pot bracket.

4,206,827

STEERING GEARS

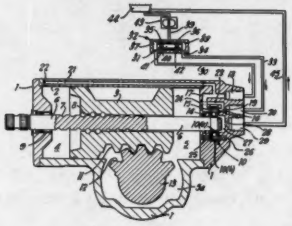
Frederick J. Adams, Avon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Oct. 16, 1978, Ser. No. 951,776

Claims priority, application United Kingdom, Oct. 17, 1977, 43063/77

Int. Cl.[2] B62D *5/08*

U.S. Cl. 180—132 **25 Claims**



1. A power-assisted gear assembly comprising a piston axially slidable in a piston cylinder and forming therewith opposed piston chambers, displacement of said piston being intended to provide or assist in a steering output;

an output component coupled to the piston to effect axial displacement thereof when a steering input is applied to the input component;

two fluid systems each of which has a fluid inlet, said piston chambers forming part of and being located one in each of the fluid systems;

valve means associated with the input component and controlling fluid flow through the two fluid systems to an outlet of the assembly, said valve means having a neutral condition in which both fluid systems communicate with the outlet, and wherein said valve means is adjustable from its neutral condition upon the application of a steering input to the input component and in response to the reaction from the force applied to displace the piston, said adjustment of the valve means being such that it closes one or other of the fluid systems to communication with the outlet, the particular fluid system which is closed being that in which is located the piston chamber which, when subjected to fluid pressure, provides assistance to displacement of the piston in the same axial direction as that effected by the steering input, the input component exhibits rotary motion when a steering input is applied thereto and the valve means is adjusted in response to the reaction applied thereto by rotation of the input component to displace the piston.

4,206,828

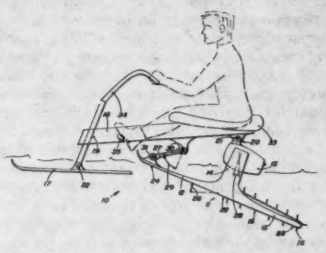
POWER DRIVEN SKI-BOB WITH SELF ENERGIZING FRAME

Royce H. Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.

Filed Dec. 26, 1978, Ser. No. 972,911

Int. Cl.[2] B62M *27/02*

U.S. Cl. 180—184 **9 Claims**



1. In a power driven ski bob comprising in combination:

an elongated propulsion unit having an anterior sliding surface portion, a posterior endless tread portion and an upwardly extending post means,

an engine coupled to said endless tread,

a front steerable ski,

a bridge means which connects to said front steerable ski through a swivel-connection and said post means through a pivot connection,

the improvement wherein said pivot connection is substantially higher than an undersurface of said propulsion unit so that the pressure between said anterior sliding surface and the snow is decreased and the pressure between said posterior endless tread portion and the snow is increased in response to thrust generated by said tread against the snow, so that engagement of said tread with the snow would be secured as said propulsion unit rotates around said pivot connection.

4,206,829

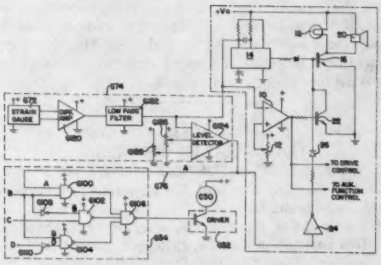
CONTROL SYSTEM FOR LIFT TRUCKS OR THE LIKE

Grant C. Melocik, Chardon, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Filed Dec. 27, 1976, Ser. No. 754,812

Int. Cl.[2] B60R *21/00*

U.S. Cl. 180—290 **6 Claims**



5. A control system for a work performing vehicle having a load-handling means movable with respect to the vehicle frame, comprising:

means for selectively operating said load-handling means;

sensor means for sensing the degree of an overload condition of the vehicle and for providing an electrical signal having a characteristic proportional to the degree of overload;

first means receiving said signal and responsive to a predetermined magnitude representative of a predetermined degree of overload for disabling said operating means;

second means receiving said electrical signal and responsive to a magnitude different from said predetermined magnitude and representative of a lesser degree of overload than said predetermined degree of overload for providing an output signal; and

means comprising an electrical signaling device responsive to said electrical output signal for providing an indication perceptible to the operator of the vehicle that said predetermined degree of overload is being approached, said indication providing means including a variable frequency oscillator for intermittently driving said electrical signaling device, said variable frequency oscillator having an input for receiving said electrical signal and including means for changing the frequency of oscillation responsive to a change in the magnitude of said electrical signal, said indication providing means including means preventing the provision of said perceptible indication except when said lesser degree of overload condition exists; and

means for continuously driving said signaling device when said predetermined degree of overload is sensed.

4,206,830

VEHICLE SPEAKER SYSTEM PROVIDED WITH A PASSIVE RADIATOR

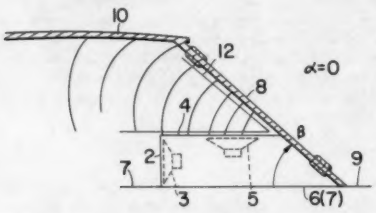
Hiroshi Sohma, Tokyo, and Toshihiro Tanno, Tendo, both of Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,857

Claims priority, application Japan, Nov. 22, 1977, 52-157102[U]

Int. Cl.[2] G10K *10/00*; H05K *5/00*

U.S. Cl. 181—141 **8 Claims**



1. In a speaker system adapted to be mounted in a vehicle adjacent the vehicle's rear window which is inclined upwardly toward the front of the vehicle, said speaker system having an active speaker unit and a passive speaker unit mounted in a housing, the improvement comprising means for mounting said passive speaker unit in said housing to face said rear window so that said rear window and the top wall of said housing form an acoustical horn directing the sound from said passive speaker unit toward the front of said vehicle.

4,206,831

LOUDSPEAKER COUPLER

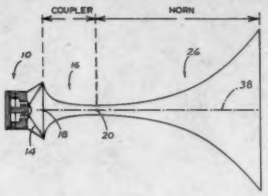
Robert B. Welch, 6324 SE. 28th St., Portland, Oreg. 97202, and Joseph W. Griffith, Portland, Oreg., assignors to Robert B. Welch, Milwaukie, Oreg.

Continuation of Ser. No. 671,253, Mar. 29, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,827

Int. Cl.[2] G10K *13/00, 11/00*

U.S. Cl. 181—159 **15 Claims**

1. In combination with a loudspeaker, a hollow, non-resonant coupler having an open outlet end and an open inlet end communicating with and closed by the loudspeaker, the coupler having substantially inflexible walls that are substantially unresponsive to the internal air pressure generated by the loudspeaker, to inhibit radiation of sounds to the atmosphere, the cross sectional area of the hollow coupler decreasing progressively from its inlet end to its outlet end, and a horn having an inlet end communicating with and substantially matching the cross sectional area and shape of the outlet end of the hollow coupler.



4,206,832

DRONE ACOUSTICAL TRANSDUCER

Thomas A. Yocum, Jack Oak Rd., Cassville, Wis. 53806

Filed Jan. 17, 1979, Ser. No. 4,148

Int. Cl.[2] G10K *13/00*

U.S. Cl. 181—166 **6 Claims**

1. A drone acoustical transducer for a loudspeaker system, comprising

a. an external, vented basket having an open front and a rear wall,

b. a generally conical transducer diaphragm located within said basket, said diaphragm being truncated at its convergent end and being open at its divergent end,

c. means flexibly connecting the divergent end of said diaphragm to the front of said basket,

d. a boss extending inwardly from the rear of said basket, the diameter of the top of said boss being smaller than the diameter of the convergent end of said diaphragm,

e. spider means flexibly interconnecting the convergent end of said diaphragm with the top of said boss, and

f. said rear wall of the basket being concave inwardly toward the diaphragm to allow excursion of the diaphragm to depths within the basket greater than the height of said boss.

4,206,833

MOBILE AERIAL TOWER

Wynand M. J. M. Goyarts, Washington, Pa., assignor to Clark Equipment Company, Buchanan, Mich.

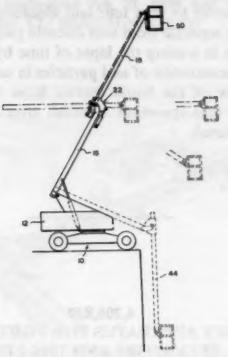
Filed Jul. 15, 1976, Ser. No. 705,749

Int. Cl.[2] B66F *11/04*

U.S. Cl. 182—2 **14 Claims**

1. A mobile aerial tower comprising an elongated first boom mounted at one end from a support means on a first pivot and extending longitudinally to a remote end, a carriage assembly mounted on a second pivot at said remote end for supporting

and guiding an elongated second boom which when retracted is adapted to extend in substantial parallel and longitudinally adjacent relation to said first boom, motor means operatively connected to said second boom for actuating it to extend longi-



tudinally outwardly of said carriage assembly and of said first boom from its said retracted position, and actuator means for actuating the first boom about said first pivot and for actuating said carriage assembly with said second boom about said second pivot.

4,206,834

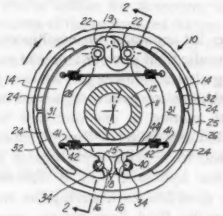
BRAKE ASSEMBLY

William J. Williams, Lake Orion, Mich., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 687,063, May 17, 1976. This application Apr. 27, 1977, Ser. No. 791,368

Int. Cl.[2] F16D *65/09*

U.S. Cl. 188—341 **23 Claims**



1. A brake shoe including at least one continuous rigid web having an open ended recess at one end, said recess being of a width to radially, slidably engage a cylindrical bearing surface of an anchor pin mounted to a support on a vehicle axle housing and being oriented to pivot about said cylindrical bearing surface of said pin in response to an outwardly directed force applied at the other end of said brake shoe and to abut said cylindrical bearing surface and prevent movement of said brake shoe in response to a force tending to move said brake shoe away from said anchor pin.

4,206,835

LUGGAGE

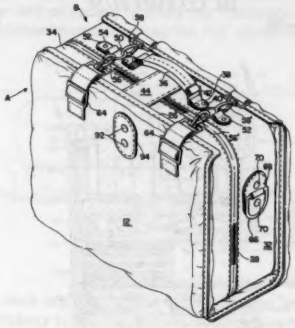
Harry G. Shapiro, Chevy Chase, Md., assignor to York Luggage Corporation, Lambertville, N.J.

Filed Sep. 14, 1978, Ser. No. 942,193

Int. Cl.[2] A45C *13/00*

U.S. Cl. 190—60 **17 Claims**

1. A garment bag-carrying case assembly, the garment bag comprising first and second panels of flexible material connected to one another at their edges, the first panel having a longitudinally extending opening provided with a closure, the carrying case comprising a bottom wall, side walls, end walls and a top wall, the top wall having a handle secured thereto, the carrying case having a length substantially equal to the width of the garment bag, the garment bag having a length



sufficient to substantially cover said bottom wall and said side walls, connector means secured to the carrying case, and longitudinally spaced connector means secured to the second panel to extend from each end of the garment bag for separable connection to the connectormeans secured to the carrying case.

4,206,836

DRIVE FOR ROTARY KILNS, MILLS AND THE LIKE

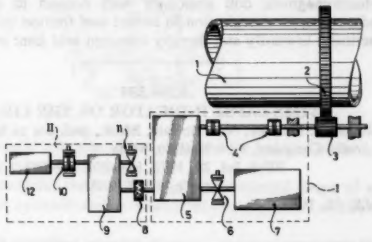
Jürgen Wurr, Ennigerloh, and Reinhard Korting, Enniger, both of Fed. Rep. of Germany, assignors to Polysius AG, Neubeckum, Fed. Rep. of Germany

Filed Oct. 19, 1977, Ser. No. 843,425

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1976, 7635388[U]

Int. Cl.[2] B60K *41/28*; F16D *67/02*

U.S. Cl. 192—7 **3 Claims**



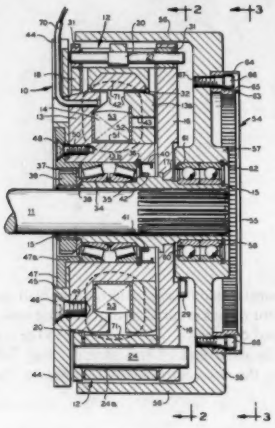
1. Apparatus for driving rotary tube furnaces, mills and the like, comprising (a) a main drive including a main electric motor and main gearing disposed between the main motor and the unit being driven, (b) an auxiliary drive including an auxiliary electric motor and auxiliary gearing disposed between the auxiliary motor and the main gearing, (c) a clutch operative in both rotational directions between the auxiliary gearing and the main gearing, and (d) a centrifugal brake effective in both rotational directions connected to the auxiliary drive, wherein the improvement comprises a further centrifugal brake connected between the main motor and the main gearing, said brakes limiting excess rotary speed of said unit in both directions of rotation.

4,206,837

CENTRIFUGAL CLUTCH HAVING ELECTROMAGNETIC RELEASE

Henry M. Brown, Leicester, and Richard L. Mitchell, Wellesley, both of Mass., assignors to Dana Corporation, Toledo, Ohio

Filed Mar. 2, 1978, Ser. No. 882,575
Int. Cl.[2] F16D 43/18
U.S. Cl. 192—90 9 Claims



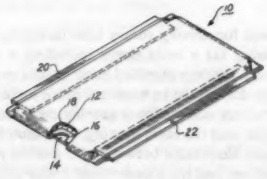
1. A clutch assembly including a rotatable input shaft, a rotatable output member circumferentially disposed about said input shaft, friction means mounted on said input shaft for radial movement toward and away from said output member, said output member including a drum member having an axially-extending flange circumferentially disposed about said friction means, roller means mounted radially outward of said rotatable shaft between said drum member and said shaft for accommodating relative rotary movement therebetween, said friction means having a magnetic pole and adapted in response to rotation of said input shaft to move radially outwardly thereof and frictionally contact said output member thereby to unite said shaft and output member in joint rotation, and an electromagnetic coil stationary with respect to said shaft adapted upon energization to attract said friction means magnetically inwardly and thereby interrupt said joint rotation.

4,206,838

TIME-LAPSE INDICATOR OR THE LIKE

Robert F. Bradley, New Buffalo, Mich., assignor to Micro-Circuits Company, New Buffalo, Mich.

Filed Jul. 28, 1978, Ser. No. 928,788
Int. Cl.[2] G07F 9/02
U.S. Cl. 194—4 F 17 Claims



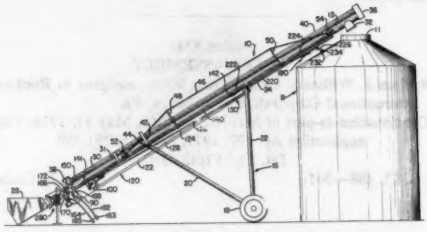
1. A time-lapse indicator comprising a fluid material having numerous electrically conductive discrete solid particles and a liquid carrier in which said particles are dispersed, a layer of absorbent material for absorbing varying amounts of said liquid carrier depending upon the length of time said liquid carrier is in contact with said absorbent material, and a wall forming a receptacle encapsulating said fluid material and having a rupturable wall portion separating said fluid material from said absorbent material until said wall portion is ruptured to permit said liquid carrier to flow into said absorbent material and at least partially separate from said discrete particles, and spaced means for use in sensing the lapse of time by determining the degree of concentration of said particles in said liquid resulting from the flow of the liquid carrier from the discrete solid particles into said absorbent material, after said wall portion has been ruptured.

4,206,839

SAFETY LIFT APPARATUS FOR PORTABLE GRAIN ELEVATORS AND THE LIKE

Wendell M. Young, Berlin, N. Dak. 58415

Filed Jul. 20, 1977, Ser. No. 817,156
Int. Cl.[2] B65G 43/00
U.S. Cl. 198—301 17 Claims



1. Safety power lift apparatus for machinery, comprising:

reversible hydraulic fluid powered motion producing means for imparting alternate lifting and lowering motion to the machinery, said motion producing means being adapted to respond with motion in one direction when hydraulic fluid is directed therein in one flow direction for lifting the machinery and to respond with motion in the opposite direction when hydraulic fluid is directed therein in a reverse flow direction for lowering the machinery;

a normal hydraulic fluid flow circuit connected to said motion producing means and adapted for conducting required flow of hydraulic fluid in said one direction and in said reverse direction to said motion producing means;

a bypass hydraulic fluid flow circuit adapted to conduct flow of hydraulic fluid past said motion producing means;

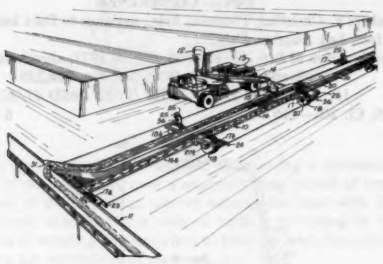
valve means in said hydraulic fluid flow circuit adapted to allow hydraulic fluid to circulate in both said one flow direction and in said reverse flow direction in said normal circuit when said valve means is in a normal mode, said valve means also being adapted to divert hydraulic fluid circulating in said one flow direction through said bypass circuit but to prohibit fluid from circulating in said reverse flow direction through said bypass circuit while still allowing fluid to circulate in said reverse flow direction through said normal circuit to said motion producing means when said valve means is in an alternate mode; and

valve actuating means that is sensitive to a motion range limit connected to said valve means for actuating said valve to switch from said normal mode to said alternate mode when the motion range limit is reached.

4,206,840
MOVABLE BELT CONVEYOR ASSEMBLY

Raymond A. Hanson, c/o R. A. Hanson Company, Box 7400, Spokane, Wash. 99207

Continuation-in-part of Ser. No. 708,902, Jul. 26, 1976, abandoned. This application Feb. 21, 1978, Ser. No. 879,067
Int. Cl.[2] B65G *41/00, 43/00*
U.S. Cl. 198—301 18 Claims



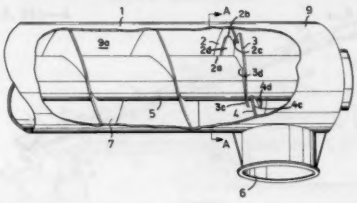
1. A mobile belt conveyor assembly comprising:
an endless powered belt arranged along a straight longitudinal path and including an upwardly facing flight for receiving particulate solid material along its length and a return flight, the flights being stretched between a first end roller assembly at an inboard end and a second end roller assembly at an outboard end;
a plurality of frame segments movably supporting the belt and joined end-to-end about pivot connections arranged between said first and second end roller assemblies;
a plurality of ground-supported carriages mounted individually to the segmented frames, each supporting a segmented frame for pivotal movement thereon about a longitudinal axis;
individual power means mounted to each carriage for driving the carriage in a direction transverse to the belt;
sensing means mounted to the respective segmented frames, said sensing means being operatively connected to said individual power means for detecting variations in the relative positions of the segmented frames and for controlling operation of the individual power means to maintain the segmented frames in a condition such that the path of the belt along the segmented frames remains straight during movement of the conveyor assembly in a direction transverse to the belt; and
cross leveling means interconnecting the carriages and frame segments for maintaining the upwardly facing flight in a laterally horizontal orientation.

4,206,841
SCREW CONVEYOR CAPABLE OF MAINTAINING A RELATIVELY UNIFORM FLOW OF CONVEYED MATERIAL

Rolf B. Lundgren, Ornskoldsvik, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation-in-part of Ser. No. 906,491, May 16, 1978, abandoned. This application Jun. 26, 1978, Ser. No. 918,896
Claims priority, application Sweden, May 20, 1977, 7705949
Int. Cl.[2] B65G *33/00*
U.S. Cl. 198—670 18 Claims

1. A screw conveyor capable of maintaining a relatively uniform flow of conveyed material even when operating at well below its flow capacity, comprising, in combination, a housing; an elongated conveyor passage through the housing, having an inlet and an outlet at opposite ends thereof; a helical screw having a central stem and a helical blade extending outwardly therefrom, rotatably mounted in the passage, for conveying material along the passage from one end to the other with rotation of the screw; and a plurality of helical blade segments at one end of the screw, each segment extending over an arc of from about 100° to about 130° about the central stem of the screw, having a pitch length within the range from about 0.5 to about 3 times the pitch length of the helical screw, the helical screw having a pitch length from about 0.5 to about 1 times its diameter; the segments being spaced apart a distance not exceeding about 22 mm; the plurality of segments taken collectively defining a plurality of through passages extending axially along the central stem of the screw and extending in relatively uniformly spaced relationship circumferentially about the 360° circumference of the

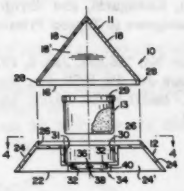


passage, each segment having a base portion attached at its inner periphery to the central stem of the screw over an arc of from about 50° to about 60°, and a wing portion extending about and abutting the inside wall of the passage, and terminating in a tip whose outside edge is abutting the inside passage wall and whose inside edge extends along a chord line intersecting the inside wall of the passage, the wing portion defining an open space between its inner periphery and the central stem of the screw, the space forming a part of a through passage defined by the segments.

4,206,842
PYRAMID CONTAINER DEVICE

Len Burridge, Jr., Sarasota, Fla., assignor to Ron Haag, Haines City, Fla.

Filed Jul. 7, 1977, Ser. No. 813,473
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—45.19 7 Claims



1. A pyramid container device adapted for holding an item, comprising in combination:
a first container member having the substantial shape of a regular pyramid with a substantially square first container base;
a second container member having a top commensurate in size with said first container base of said first container member;
connecting means for securing the first container base of said first container member to the top of said second container member forming the pyramid shaped container device;
an inner container for holding the item;
a first aperture in said first container member for receiving said inner container at the geometric center of the pyramid container formed by said first and second container members;
a second aperture established in said second container member and located along a common axis with said first aperture which common axis extends through an axis of symmetry of said second container member; and

a compass tightly receivable in said second aperture for aligning the pyramid container device relative to the magnetic field of the earth.

4,206,843

CAUTERIZING SYSTEM

Rhett K. Rainey, Box 1434, San Francisco, Calif. 94149

Filed Jun. 15, 1978, Ser. No. 915,588

Int. Cl.[2] A61B *10/00;* **A61M** *35/00;* **B65D** *83/00*

U.S. Cl. 206—216 **10 Claims**

1. In a cauterizing system: swab means including an elongated means having absorbent means on one end thereof and cauterizing means on the other end thereof;

an elongated container means having an open end and a closed end, said container means being formed of deformable material;

said swab means being adapted to fit within said elongated container means through said open end;

ampoule means containing topical anesthetic means adapted to fit within said container, said ampoule means being made of frangible material and adapted when positioned in said container means, to be crushed when the portion of said container means adjacent said ampoule means is squeezed inwardly, thus releasing said topical anesthetic means within said container means whereby said absorbent means absorbs said topical anesthetic means after said ampoule means is crushed;

4,206,844

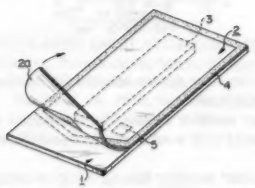
PACKAGE FOR A STERILIZED MATERIAL

Sunao Thukamoto, Kawaguchi, and Shyoji Yokokoji, Yashio, both of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 756,698, Jan. 4, 1977, abandoned. This application Jul. 19, 1978, Ser. No. 926,125

Int. Cl.[2] B65D *85/00, 65/38;* **A61L** *3/00*

U.S. Cl. 206—439 **9 Claims**



1. A package of a sterilized material comprising a package body in which one side of a breathable, germ-proof paper substrate is coated with a water based thermoplastic polyester resin emulsion layer, and an emulsion layer of a water based thermoplastic resin selected from the group consisting of polyolefins, denatured polyolefin and ionomer resin, which is laminated on said polyester resin emulsion layer; and a covering sheet heat-sealed to the thermoplastic resin emulsion layer surrounding a disinfected object contained in the package body; the inside of said package being provided with means for indicating the completion of sterilization, said means comprising an ink composition containing a calcium halide for producing alkaline calcium hydroxide upon reaction and sterilization of the package with ethylene oxide and at least two pH-indicators which change color in the pH-region of 2 to 10, each pH-indicator having a different color-change region from each other to produce a stepwise color change as sterilization progresses.

4,206,845

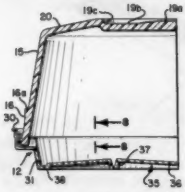
FOOD CONTAINER

Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.

Continuation of Ser. No. 830,508, Sep. 6, 1977, abandoned. This application Nov. 27, 1978, Ser. No. 964,239

Int. Cl.[2] B65D *21/02;* **A47G** *19/02;* **B65D** *43/10*

U.S. Cl. 206—508 **6 Claims**



1. A food container, comprising: base structure, said base structure having an upper side and bottom end, the upper side of said base structure defining a hollow for holding food to be served said bottom end including foot structure comprising concentric inner and outer U-shaped rims having lower edges lying in a common plane; cover structure, said cover structure having a top end and under side bounded by a lower edge, the under side of said cover structure defining a bowl shaped cover for covering the upper side of said base structure and food held therein; said cover structure tapering outwardly from its top end towards its lower edge so that one of said cover structures may be stacked on another including; first stop means formed on said cover structure for determining the stack height of one of said cover structures on another; said first stop means comprising a thickened intermediate portion of said tapered cover structure defining an outwardly extending ledge above said catch structure; latch means associated with said base and cover structures for detachably securing the lower edge of said cover structure upon the upper side of said base structure to form an assembled food container, said latch means being operable to substantially seal said assembled food container against food spillage comprising catch structure formed around the outer periphery of the lower edge of said cover structure; said catch structure comprising a thickened annular band area about the lower rim portion defining an outwardly extending ledge; and resilient lip structure formed around the outer periphery of the upper edge of said base structure, said lip structure defining an upwardly opening groove having an inwardly directed annular lip over which said thickened lower rim portion interfits and being operable to detachably latch thereon.

4,206,846

PALLET LOAD WRAPPING WITH STRETCHABLE PLASTIC NETTING

Hugh R. Connolly, Minnetonka, Minn., assignor to Bemis Company, Inc., Minneapolis, Minn.

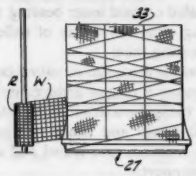
Continuation-in-part of Ser. No. 840,892, Oct. 11, 1977, Pat. No. 4,136,501. This application Dec. 20, 1978, Ser. No. 971,549

Int. Cl.[2] B65D *19/00, 75/02*

U.S. Cl. 206—597 **8 Claims**

5. A pallet load wrapped with a continuous web of plastic netting, said web of netting having strands extending generally longitudinally of the web spaced at intervals transversely of

the web and strands extending generally transversely of the web spaced at intervals longitudinally of the web, the netting being formed of a thermoplastic synthetic resin material, the longitudinal and transverse strands being integrally joined at the intersections thereof, the longitudinal strands being elastic



so as to be stretchable and capable of retaining a substantial degree of their elasticity over a relatively long period of time, said web of netting being wound around the load with the longitudinal strands of the web of netting extending in the direction of winding and stretched to bind the load, the netting allowing for ventilation of the load.

4,206,847

CLOTHES-HORSE

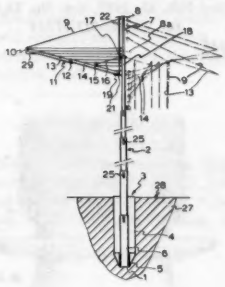
Fredericus J. Brink, Veenedaal, Netherlands, assignor to Ingenieursbureau Het Noorden B.V., Groningen, Netherlands

Filed Aug. 11, 1978, Ser. No. 932,984

Claims priority, application Netherlands, Aug. 19, 1977, 7709181

Int. Cl.[2] D06F *57/04*

U.S. Cl. 211—1.3 **3 Claims**



1. A clothes drier, comprising

(a) a standard comprising a plurality of telescoping members;

(b) a socket for said standard, having an opening at the top thereof, the lowermost one of said telescoping members being attached to and fully contained within said socket;

(c) at least three side arms extending from the upper portion of said standard at substantially equal angles from one another and having clothes-lines extending therebetween, each of said side arms comprising a radially inner part and a radially outer part, said inner and outer parts being substantially identical and hinged to one another;

(d) an auxiliary arm hingedly connected to one end to each said inner part at substantially the center thereof and at its other end to the second uppermost one of said telescoping member above the inner ends of said inner parts, each said auxiliary arm having a length substantially one-half the length of said parts of said side arms, said inner ends of said inner parts being adjacent to and slidable over said standard; and

(e) a lid member attached to the uppermost one of said telescoping member, said lid member being larger than said opening in said socket and having a bearing connection with the outer ends of said outer parts of said side arms.

4,206,848

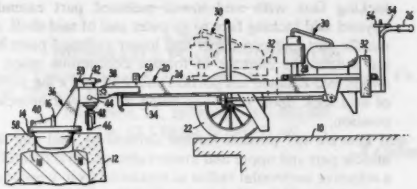
INGOT MOLD CAP REMOVING AND HANDLING APPARATUS

Klaus H. Wiese, Rialto, and James P. Sullivan, Upland, both of Calif., assignors to Kaiser Steel Corporation, Oakland, Calif.

Filed Aug. 28, 1978, Ser. No. 937,054

Int. Cl.[2] B66C *13/00*

U.S. Cl. 212—4 **8 Claims**



1. Apparatus for removing, handling and replacing ingot mold caps having lifting eyes, said apparatus comprising a lever member adapted to extend transversely across the top of a mold cap and to extend beneath the lifting eye of a cap in connected, lifting relation thereto, fulcrum means for the lever member adapted to be disposed to one side of a cap at the top of an ingot mold, and power means to move the lever member upwardly about the fulcrum means and thereby tip the cap upwardly and progressively break it free of engagement with a mold, the power means comprising a power cylinder connected to the lever member and operable when energized to bear against the top of the mold at the opposite side of the cap and move the lever member about the fulcrum means, the power cylinder being pivotally connected to the lever member, the spring means positioning the power cylinder in an upright position relative to the lever member as the lever member is brought into connected lifting relation to the cap.

4,206,849

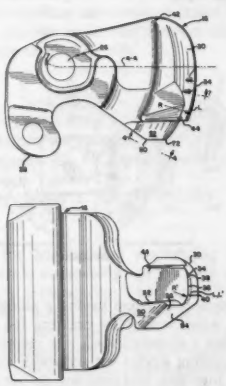
TAIL PORTION FOR RAILROAD CAR COUPLER KNUCKLE

John W. Kaim, Chicago, Ill., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 20, 1978, Ser. No. 926,449

Int. Cl.[2] B61G *3/06*

U.S. Cl. 213—151 **2 Claims**



1. In an E-type railroad car coupler having a coupler head

rotatively carrying a knuckle and a lock positioned in a vertical lock chamber formed in said coupler head, said knuckle swingable about a pivot center between a closed and locked position and an open and unlocked position as regulated by a vertical position of said lock in said lock chamber, said lock position allowing a selective interaction between a tail portion of said knuckle and said lock, an improvement of said knuckle tail portion further comprising,

an arcuated end wall defined by a substantially vertical middle part joined by a lower radiused part and an upper radiused part, said end wall extending horizontally between a tail stop and a locking face of said knuckle tail portion, a locking shelf projecting outwardly from said locking face with said lower radiused part extending beyond said locking face to an outer end of said shelf, said middle part and said upper and lower radiused parts having a selective contour to form a continuous space between said knuckle tail portion end wall and a leg portion of said lock upon said lock being in a raised unlocking position,

said knuckle tail portion further defined by said end wall middle part and upper and lower radiused parts formed on a selective horizontal radius as measured from a pivot axis of said knuckle, said horizontal radius having one end terminating at said locking face of said knuckle tail portion and an opposite end intersecting substantially tangential to an adjacent portion of said end wall with said opposite end proximately aligning with a point located one-fourth of a distance from said locking face to said tail stop, and

said end wall lower radiused part further formed on a selective vertical radius having a bottom end tangentially joining a bottom inclined surface of said tail portion and a top end joining a top surface of said locking shelf and a bottom of said end wall middle part between said locking face and said point and extending toward said knuckle tail stop and terminating beyond a midpoint of said knuckle tail portion end wall,

wherein contact between said knuckle tail portion end wall and said lock leg portion is prohibited by said space as said knuckle swings from said open position to said closed position.

4,206,850

COUPLING DEVICE FOR MONORAIL VEHICLES

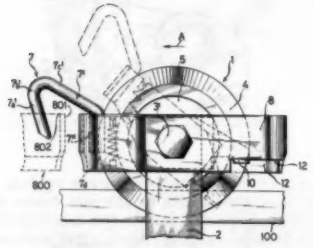
Erwin Grube, Bielefeld, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,788

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 7708906

Int. Cl.[2] B61G *1/00*; B61B *3/00*

U.S. Cl. 213—175 **5 Claims**



1. In a monorail system having a plurality of vehicles with respective wheel assemblies enabling the displacement of the vehicle along a monorail track, the improvement which comprises a coupling device for releasably connecting two such assemblies together, said coupling device comprising:

a generally rectangular support having a pair of longitudinal lateral sides extending in the direction of said track and a pair of opposite ends, said support being formed from a bent-metal strap;

a bolt passing through said lateral sides and spanning such support;

an elongated tubular inner bearing race surrounding said bolt between said lateral sides;

a wheel journaled on said inner bearing race and having an outer bearing race and a row of roller bodies engaging said inner bearing race;

a generally U-shaped stirrup received between said lateral sides and having a pair of arms extending from a bight, said stirrup being bent from metal strap and said arms flanking said wheel and being swingable on said inner bearing race between said wheel and a respective lateral side of said support;

a bent-rod hook affixed to said bight and swingable with said stirrup to hook over the support of another wheel assembly, one of said lateral sides being formed with a cutout and a corresponding one of said arms being formed with a laterally extending tongue projecting from said cutout and enabling said stirrup to be swung to disengage said hook from said other support.

4,206,851

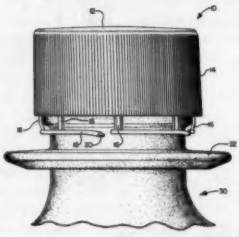
TAMPERPROOF CLOSURE

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Ethyl Products Company, Baton Rouge, La.

Filed Feb. 23, 1979, Ser. No. 14,626

Int. Cl.[2] B65D *41/34*

U.S. Cl. 215—246 **15 Claims**



1. A thermoplastic, tamperproof closure for fitment to a container, said container having a threaded neck and an outwardly extending flange beneath said neck thread, said closure comprising:

a. a top wall;

b. an annular sidewall downwardly depending from said top wall and having about its inside surface a thread for cooperation with said container thread; and

c. an annular band,

i. attached to said sidewall by a plurality of spaced apart ribs, said ribs being of sufficient length so that said band is below said annular flange when said closure is fitted to said container, and

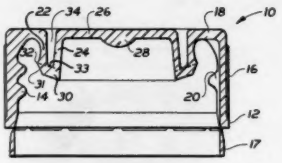
ii. having at least one fracturable area of reduced strength so that said fracturable area is fractured as said closure is removed from said container,

said band and said ribs being shrinkable upon the application of heat thereto so that said band will nest in a position of interference under said annular flange when said closure is fitted to said container.

4,206,852
LINERLESS CLOSURE FOR PRESSURIZED CONTAINER

Lloyd G. Dunn, and Elmer E. Pohlenz, both of Richmond, Ind., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 26, 1979, Ser. No. 6,597
Int. Cl.[2] B65D *41/34*
U.S. Cl. 215—252 11 Claims

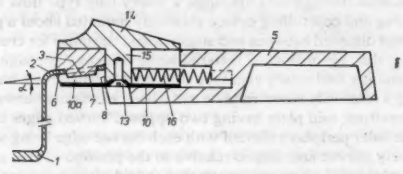


1. A linerless plastic closure adapted to seal a container comprising:
- a closure skirt with closure retaining means on the interior surface thereof;
- an annular top wall extending inwardly from the top of the closure skirt;
- a first cylindrical wall extending downwardly from the inner edge of said annular top wall;
- a second annular wall extending inwardly and downwardly from the bottom edge of said first cylindrical wall at an angle from 10° to 30° with a horizontal plane;
- an outwardly projecting sealing wedge defined by a bottom portion of said first cylindrical wall and an upper portion of said second annular wall to provide a narrow sealing contact band when said closure is applied to said container;
- a second cylindrical wall extending upwardly from a bottom portion of said second annular wall; and
- a circular central end wall closing the upper end of said second cylindrical wall.

4,206,853
COOKING UTENSIL

Kurt Iten, Steinhausen, and Franz Hochuli, Zug, both of Switzerland, assignors to Verzinkerei Zug AG, Zug, Switzerland

Filed Jul. 18, 1978, Ser. No. 925,845
Claims priority, application Switzerland, Jul. 18, 1977, 8842/77
Int. Cl.[2] A47B *95/02*
U.S. Cl. 220—94 R 5 Claims

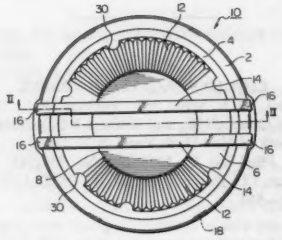


1. A household cooking utensil comprising a receptacle having an outstanding flanged rim extending over at least part of the receptacle circumference, said flanged rim having generally parallel upper and lower surfaces, a handle extending from said flanged rim, and detachable connection means removably connecting said handle to said flanged rim, said connection means comprising a fixed upper jaw fixed relative to said handle and having a bearing surface facing downwardly in removable bearing face to face engagement with the upper rim surface, a movable lower jaw carried by said handle and shiftable longitudinally thereof for movement between a retracted non-clamping position outwardly of the fixed jaw and rim and an extended clamping position beneath said rim and in generally full facing relation with said fixed jaw, said movable jaw having an upwardly facing bearing surface parallel to said fixed jaw bearing surface throughout jaw movement and in upwardly bearing face to face engagement with the underside of said rim in the clamping position, said bearing surfaces of said jaws being oblique to the direction of jaw movement for moving said movable jaw into said clamping engagement in the manner of a wedge, and interfitting formations on said fixed jaw and rim for locating said fixed jaw relative to said rim, said upwardly facing bearing surface of said movable jaw extending beyond said interfitting formations for stable clamping engagement.

4,206,854
DISPOSABLE PLASTIC UPPER LID

Yasushi Takami, Sayama, Japan, assignor to Myojo Foods Co., Ltd., Tokyo, Japan

Filed Nov. 22, 1978, Ser. No. 962,897
Int. Cl.[2] B65D *51/16, 21/02*
U.S. Cl. 222—478 4 Claims



1. A disposable plastic upper lid to be frictionally mounted on the rim of a container of a quick-cooking food comprising:
- a frictional mounting peripheral, U-shaped flange having a given height,
- an annular groove disposed along the inner periphery of the flange,
- at least one reinforcing rib that crosses the upper lid parallel to the diameter of said upper lid and connects with said flange,
- a port formed by said at least one rib for draining the container of liquid in such a manner that said at least one rib extends beyond the flange,
- an annular horizontal member disposed along the inner periphery of the annular groove of an doughnut form, and
- a ridged portion comprising saw-toothed ridges occupying that area of the annular horizontal member which is free of the at least one reinforcing rib.

4,206,855
STORAGE BIN WITH MULTIPLE DISCHARGE OPENINGS FOR PARTICULATE MATERIAL

Charles R. Foster, Douglasville, Ga., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 15, 1978, Ser. No. 916,017
Int. Cl.[2] B67D *3/00*
U.S. Cl. 222—482 9 Claims

1. A receptacle for holding and discharging particulate material, said receptacle comprising upright side wall means defining a space having a center line, a bottom wall of inverted conical shape extending across said side wall means and enclosing the lower portion of same, a plurality of discharge openings in said bottom wall and including at least one opening near the side wall means and at least a second opening spaced from said center line by a distance from five-eights to seven-eights of the distance from the center line to said side wall means, an upright

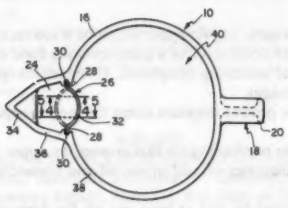
conical wall supported on said bottom wall and having peripheral portions located inwardly of the second discharge opening, said conical wall having peripheral edge portions spaced from said bottom wall, a central discharge duct communicating with the lowest portion of said bottom wall, a normally-closed valve located in said central discharge duct, and a plurality of discharge lines connecting said discharge openings and said central discharge line below said valve.

4,206,856

LIQUID SEPARATING VESSEL

Stanley Lobel, 30 E. Wind Rd., Yonkers, N.Y. 10710; Leon Lobel, 110 Campbell St., and Herbert I. Schachter, 86 Campbell St., both of New Hyde Park, N.Y. 11040

Filed Sep. 18, 1978, Ser. No. 943,113
Int. Cl.[2] B01D *12/00, 17/00*; B67D *3/00*
U.S. Cl. 222—564 6 Claims



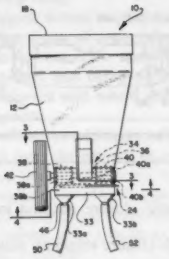
1. A gravey separating vessel comprising a bottom and a sidewall, said sidewall extending up from the perimeter of said bottom to define the interior volume of the vessel, first engagement means disposed on said sidewall, seat means positioned with respect to said first engagement means in such a manner that an element engaging said first engagement means will have its downward movement limited to a minimum distance from said bottom; a baffle positioned, configured and dimensioned to define, together with a portion of said sidewall, a conduit within a portion of said interior volume; first mating means positioned on said baffle and configured and dimensioned to engage said first engagement means and said seat means in such a manner that when said first mating means is in engagement with said seat means said baffle is disposed a first distance from said bottom and defines an orifice of first size communicating with said conduit and adjacent said bottom; and second mating means positioned on said baffle and configured and dimensioned in such a manner that when said baffle is removed and said second mating means is put into engagement with said first engagement means and said seat means, said baffle is disposed a second distance from said bottom and defines an orifice of second size, said orifice of second size and said orifice of first size being relatively small compared to the height of said sidewall.

4,206,857

AGRICULTURAL DISTRIBUTOR HAVING A CONTROL VALVE FOR PLURAL OUTLETS

C. Albert Gregory, and Willis H. Gregory, both of Rte. 2, Angier, N.C. 27501

Filed Jun. 15, 1978, Ser. No. 915,968
Int. Cl.[2] A01C *7/18, 15/00*
U.S. Cl. 222—625 4 Claims



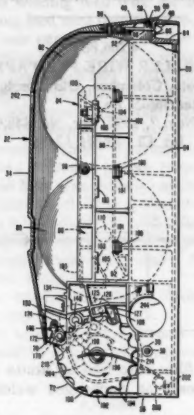
1. A multipurpose agricultural distributor for dispensing fertilizer, pesticides, herbicides and the like comprising: a hopper having a bottom and a side wall structure for holding material therein to be distributed; rotary means disposed interiorly of said hopper for engaging material within said hopper when driven; drive means for driving said rotary means wherein material within said hopper is generally agitated by said rotary means; said bottom of said hopper including at least two like and separate spaced apart openings, spaced approximately 180° apart, for allowing material to flow from said hopper; said rotary means including a drive shaft rotatively driven within said hopper above said openings, and wherein there is provided a plurality of spaced apart gear wheels fixed to said drive shaft and rotatable therewith with respective gear wheels being disposed above respective openings within the bottom of said hopper, whereby said gear wheels generally agitate the material within said hopper and also tend to meter the flow of material and through said openings during the distributing operation, and wherein said gear wheels thereof is responsive to the movement of said distributor such that the gear wheels are only driven when the distributor is being moved along a distributing path, and wherein said gear wheels are spaced relatively close to respective openings within the bottom of said hopper such that when the distributor is at a standstill and said openings are opened, said gear wheels act as a valve and generally tends to block and prohibit the flow of material through said openings; a rotary cam type flow regulating and controlling device rotatively mounted about a pivot point disposed between and adjacent said openings for controlling the rate of flow of material being dispersed through said openings, said rotary cam type flow controlling device including a rotatively mounted plate and a lever extending outwardly therefrom; said plate having two opposed curved edges about the outer periphery thereof with each curved edge being selectively curved and shaped relative to the position of said openings and said pivot point such that as said plate is rotated said opposed outer curved edges of said plate traverse across said respective openings in a manner that effectively opens and/or closes each of said openings a like amount as the plate itself actually serves to close said openings while the selective shape of each opposed curved edge allows each opening to have an equal effective opening size irrespective of the radial position of said plate, whereby the rotation of said plate results in the simultaneous opening and closing of said openings equally such that for any given setting of said plate said respective openings are opened or closed essentially the same such that the rate of flow from each opening is generally always substantially equal to the rate of flow from the other opening.

4,206,858

DISPENSER FOR FLEXIBLE SHEET MATERIAL

Raymond F. DeLuca, Stamford, Conn., and Paul W. Jespersen, Houston, Tex., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Division of Ser. No. 792,308, Apr. 29, 1977, Pat. No. 4,137,805.
This application May 22, 1978, Ser. No. 908,552
Int. Cl.[2] B26F *3/02*
U.S. Cl. 225—96 11 Claims



1. A dispenser for flexible sheet material including:

(a) a chassis;

(b) means operatively connected to said chassis for supporting rotatably a roll of flexible sheet material;

(c) means operatively connected to said chassis for guiding a web of flexible sheet material from the roll to a position to be grasped by a user so that the user may pull the web out of the dispenser;

(d) a rotatable perforating mechanism operatively connected to said chassis for perforating said web at intervals therealong to divide said web into individual sheets; and

(e) an apparatus for stopping abruptly the rotation of said perforating mechanism after said flexible sheet material has been perforated thereby and for freeing said perforating mechanism for rotation a predetermined time thereafter, said apparatus comprising:

(i) cam means operatively connected to said perforating mechanism and rotatable in a forward direction when said perforating mechanism rotates during dispensing of said flexible sheet material;

(ii) pawl means engageable with said cam means when said cam means is rotating to stop abruptly the forward rotation of said cam means and said perforating mechanism after said perforating mechanism has perforated said sheet material; and

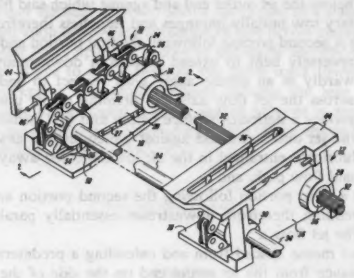
(iii) release means associated with said cam means and said pawl means for rotating said cam means in the reverse direction to release said pawl means a predetermined interval after said pawl means engages said cam means to thereby free said perforating mechanism for rotation in the forward direction.

4,206,859

EASY-LOAD RECORD MATERIAL FEED APPARATUS

Mario G. Plaza, Fremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 15, 1978, Ser. No. 960,990
Int. Cl.[2] G03B *1/30*
U.S. Cl. 226—74 6 Claims



1. Apparatus for feeding marginally punched record material, comprising:

a main support member;

a plurality of drive pins mounted to said main support member for movement along a predefined path past a first location at which record material is inserted into said apparatus; and

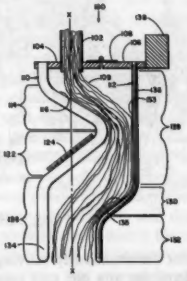
means included on said main support member adjacent said first location for facilitating the buckling of record material that is inserted into said apparatus in a direction away from said pins during movement of said pins along said path when there is no initial engagement of a pin with a marginal opening of said record material, whereby when a pin thereafter moves into substantial registration with a marginal opening of said record material, the natural bias of the buckled portion of said record material in the direction of said pins will return it to a substantially unbuckled state to thereby engage said pin with said opening.

4,206,860

AIR DISSIPATOR APPARATUS FOR AIRJET TOW PUDDLING

Benedict M. Lee, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,071
Int. Cl.[2] B65H *17/32*
U.S. Cl. 226—97 7 Claims



1. An air dissipator apparatus for connection to the outlet end of an air jet by which filamentary tow is drawn from a supply source and is air puddled into a container positioned downstream of and below the jet flow axis of the air jet, the air

dissipator apparatus defining therewithin a flow path for the filamentary tow and comprising:

first means extending a predetermined distance downstream from the jet outlet and on one side of the flow path and having

(a) a first portion extending downstream inwardly at an obtuse angle with respect to and across the jet flow axis and defining on its upstream surface a first surface below the jet outlet end and against which said filamentary tow initially impinges and ricochets therefrom,

(b) A second portion following the first portion and being reversely bent to extend therefrom downstream outwardly at an obtuse angle with respect to and back across the jet flow axis and defining on its upstream surface a deflector surface below said first surface and the jet outlet end and against which air and any fiber lubricant entrained in the air are deflected away from said flow path, and

(c) a third portion following the second portion and extending therefrom downstream essentially parallel to the jet flow a

second means spaced from and extending a predetermined distance from the jet outlet end on the side of the flow path opposite said first means and having

(a) a first portion extending downstream and beyond said reversely bend second portion generally parallel to the jet flow axis,

(b) a second portion following the first portion and extending therefrom downstream inwardly at an obtuse angle with respect to and toward the jet flow axis, and

(c) a third portion following the second portion and extending therefrom downstream in a direction generally parallel to the jet flow axis; said first portion and said second portion defining surfaces against which the filamentary tow next impinges and ricochets therefrom in its movement along the flow path toward the container.

4,206,861

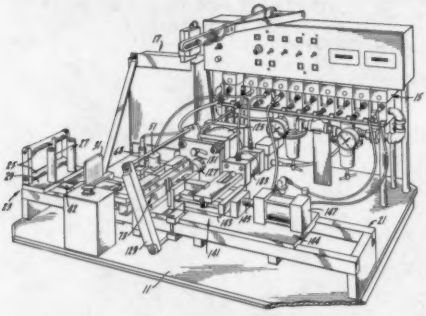
TERMINAL FORMING AND INSTALLING APPARATUS

Maurice H. Brown, 11700 S. Mayfield, Worth, Ill. 60482

Continuation-in-part of Ser. No. 844,034, Oct. 20, 1977, abandoned, which is a division of Ser. No. 738,639, Nov. 3, 1976, Pat. No. 4,068,367. This application Feb. 21, 1979, Ser. No. 13,327

Int. Cl.[2] B65H *17/26*

U.S. Cl. 226—134 **6 Claims**



1. An apparatus for simultaneously moving more than two wires into planar alignment at a die, said apparatus including:

a plurality of plates positioned adjacent to one another in a stack with the plates having flat surfaces normally in contact with flat surfaces of adjacent plates,

more than two lengths of wire positioned between the plates of said stack of plates to separate the flat surfaces of at least two pairs of plates with no more than two wires positioned between any pair of plates,

said lengths of wire bending movable between said plates when said plates are loosely stacked adjacent one another,

means for releasably clamping said stack of plates to force the flat surfaces of said pairs of plates against one another or against wires positioned between said pairs of plates to prevent the wires from moving between the plates,

means for moving said stack of plates and the wires clamped therebetween in a direction along the lengths of the wires, and

means for bringing pairs of wire positioned between adjacent pairs of plates together in a common plane.

4,206,862

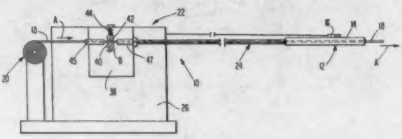
WELDING FILLER WIRE FEED APPARATUS

Dominick P. DaCosta, Columbus, Ohio, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Nov. 7, 1977, Ser. No. 848,963

Int. Cl.[2] B65H *17/08*

U.S. Cl. 226—178 **1 Claim**



1. Welding cold filler wire feed apparatus for feeding, on operator demand, only an unchanged welding filler wire, comprising:

(a) a generally elongated cylindrically configured handpiece, including:

(i) a slender cylindrically elongated electrically insulative straight outer liner having an axially extending straight passageway therethrough;

(ii) switch means, secured to said outer liner, responsive to finger pressure, for actuating a filler wire advancement means to advance said uncharged welding filler wire through said passageway;

(iii) an electrically insulative hollow filler wire guide tube extending coaxially from said outer liner, having inner diameter only slightly larger than diameter of welding feed for slideable passage of said welding feed wire therethrough;

(iv) means for securing said hollow filler wire guide tube to said elongated outer liner;

(v) means for retaining an end of a flexible conduit within said elongated outer liner at the end thereof remote said filler wire guide tube;

(vi) minature potentiometer means, secured to said outer liner, responsive to operator finger pressure, for continuously regulating speed of said motor means and resultant rate of filler wire off said reel, through said conduit and said handpiece, at a rate proportional to finger pressure applied by said operator to said minature potentiometer means as said operator grasps said handpiece; wherein said outer liner has an outer diameter of about ½ inch to permit said handpiece to be easily held, in the manner of a pencil, in the hand of a normal adult; wherein said handpiece weighs no more than about 5 ounces;

(b) said filler wire advancement means including;

(i) a base;

(ii) a frame mounted on said base;

(iii) a filler wire reel having filler wire wound thereabout, rotatably mounted on said base;

(iv) motor means, secured to said frame, responsive to finger pressure actuating filler wire through said flexi-

ble conduit, said outer liner and said hollow filler wire guide tube seriatim;

(v) drive wheel means connected to said motor output shaft, rotatable unitarily therewith;

(vi) idler wheel means movably connected to said frame for biasing said filler wire from said reel against said drive wheel;

(vii) tensioning spring means connected to a shaft of said idler wheel and to said frame; for biasing said idler wheel towards said drive wheel;

(viii) a coaxial pair of filler wire alignment tubes connected to said frame, one tube on either side of said idler and drive wheels, of inner diameter greater than diameter of said welding feed wire for slideable passage of said welding feed wire therethrough, positioned along a common axis perpendicular to the direction said tensioning spring biases said idler roller against said drive roller, for passage of said welding feed wire from said reel through a first one of said alignment tubes, between said idler and drive wheels and then through a second one of said alignment tubes seriatim to an end of said flexible conduit remote from said handpiece, to maintain welding filler wire passing therethrough at orientation so said filler wire is biased against said drive wheel by said idler wheel along a direction transverse to the filler wire longitudinal axis; said filler wire advancing to said handpiece via said flexible conduit for passage therethrough of said filler wire;

(c) said conduit including:

(i) an inner conduit formed of flexible helically coiled material; and

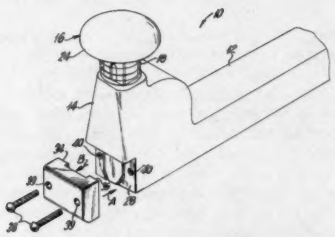
(ii) an outer tubular conduit formed of a flexible electrically insulative substantially impereable material.

4,206,863

STAPLE AND ANVILESS STAPLING APPARATUS THEREFOR

Dominick J. Savino, 65 Buttonwood Rd., Staten Island, N.Y. 10304

Filed Mar. 26, 1979, Ser. No. 23,827
Int. Cl.[2] B25C 5/02
U.S. Cl. 227—83 **10 Claims**



1. An anviless stapling apparatus for driving into a workpiece staples of U-shaped plan form configuration wherein the width of each end of the crown portion of the staple adjacent to a leg portion in a direction orthagonal to the plane of the staple is less than the effective width of the associated leg portion of the staple, said apparatus comprising:

a nosepiece structure including an elongated drive track of fixed configuration formed integrally therein and extending therethrough, said drive track having an outwardly open lower end disposed adjacent the workpiece, said drive track including an elongated crown receiving portion having a cross section substantially corresponding to the configuration of the crown of the staple, said drive track further including a pair of elongated leg receiving grooves, said leg receiving grooves being contiguous with said crown receiving portion and extending therefrom, with the width of said leg receiving grooves, in a direction orthagonal to the plane of the drive track, being greater than the width of the crown receiving portion adjacent said grooves, to thereby accommodate the effective width of the leg portions of the staple, with the lower portions of said elongated grooves being disposed at an angle to the longitudinal axis of said elongated drive track; and

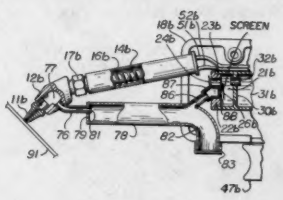
a driver element slidably mounted for reciprocal movement in the crown receiving portion of said drive track, said driver element disposed above the crown of a staple such that upon downward actuation of said driver element, the latter bears upon the crown of the staple thereby causing the staple to move through the drive track towards the workpiece and simultaneously causing the legs of the staple to be guided into the angled grooves in said nosepiece structure to achieve clinching of the staple legs for binding of the workpiece.

4,206,864

ELECTRICALLY HEATED HIGH SPEED DE-SOLDERING TOOL

George P. Rauchwerger, 183-D Commercial Ave., Sunnyvale, Calif. 94086

Filed Jun. 23, 1977, Ser. No. 809,090
Int. Cl.[2] B23K 3/04; H05B 1/00; A47L 5/04
U.S. Cl. 228—20 **4 Claims**



1. A desoldering tool comprising a casing having a handle, a hollow tip supported by said casing, a suction tube connected to and communicating with said tip, a heater tube discrete from said tip and from said suction tube for heating said tip, said heater tube extending from said casing to a position in heat-conducting contact with said tip, a heating coil in said heater tube, a solder-receiving chamber carried by and external to said casing communicating with said suction tube, said chamber being of larger cross-section than said suction tube and located spaced from said heater tube so that molten solder received in said chamber is rapidly solidified and does not run back through said tube to said tip, a cylinder in said casing formed with a partition dividing said cylinder into first and second portions, and partition being formed with an aperture, a branch tube communicating with said chamber at a location substantially elevated above the bottom of said chamber and leading upwardly from said chamber to said first portion of said cylinder so that solder is not drawn into said cylinder, a piston reciprocable in said second portion of said cylinder, said piston when moving away from said partition drawing a vacuum in said chamber and thence in said tip, a solenoid having an armature connected to said piston for moving when energized said piston from a first to a second position, spring means biasing said piston from said second to said first position, a source of current, a manually-actuated switch to energize said solenoid from said source, and a solder discharge tube extending downwardly-outwardly of and communicating with said chamber from a point below said branch tube, said discharge tube having an air-tight removable distally-disposed cap.

4,206,865

FORMED LOUVER FOR BURNER LINER

Guy W. Miller, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 14, 1978, Ser. No. 960,522
Int. Cl.[2] B21H 8/00
U.S. Cl. 228—152 3 Claims

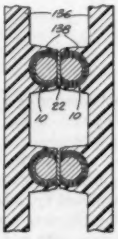
1. In the manufacture of a ring for a burner liner, the steps of:
rolling a strip of material the width of the ring to have a varying thickness crosswise of the strip to compensate for thermal stresses in the ring and an offset between the edges;
cutting the strip to lengths to form a ring; shaping each length into a ring and bonding the ends together to complete the ring; and
forming the completed ring to a frusto-conical shape for assembly purposes.

4,206,866

APPARATUS AND METHOD FOR PRODUCING HIGH SENSITIVITY MAGNETOCHEMICAL PARTICLES

Lyne S. Trimble, 4724 Arcola Ave., North Hollywood, Calif. 91602, and Florence A. Naylor, Ventura, Calif., assignors to Lyne S. Trimble, North Hollywood, Calif., by Florence A. Naylor

Filed Apr. 21, 1978, Ser. No. 898,975
Int. Cl.[2] B23K 1/12; B23P 25/00
U.S. Cl. 228—172 31 Claims



1. Apparatus for producing high sensitivity magnetochemical particles on a mass basis, in which a pair of magnetic metallic spheres are magnetically oriented and interconnected by bonded surface portions, which comprises the combination of:
a. conveyor belt means having magnetic sphere receiving means for forming and moving successive mirror image group formations of magnetic metallic spheres along a processing path;
b. means for applying a fluid resin coating to the spheres to bind and hold the spheres in the group formations;
c. means for magnetically orienting said spheres in a predetermined magnetic polar axis before hardening of said resin;
d. means for separating said mirror image group formations from said sphere receiving means;
e. means for positioning the spheres of the mirror image group formations in face-to-face relation with the spheres forming discrete pairs; and
f. means for soldering confronting surface portions of said pairs to form unitary particles.

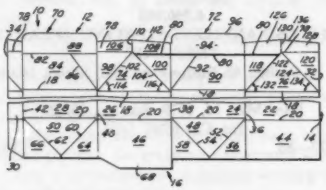
31. The method of producing high sensitivity magnetochemical particles consisting of a pair of joined metallic magnetic spheres, which comprises the steps of:
a. supporting the spheres in a predetermined group pattern formed by minute sphere receiving seating depressions in the surface of a conveyor belt;
b. suspending the seated spheres in a layer of fluid resin;
c. subjecting the resin suspended spheres to a directional magnetic field to cause rotation of the spheres, prior to hardening of the resin, into positions in which their pre-established magnetizable axis are aligned with the direction of the directional field and in parallel relation to the surface of said belt;
d. thereafter removing said group pattern of spheres from said conveyor belt and positioning one portion of the spheres of the group pattern in mirror image engagement with another portion of the spheres of the group pattern to form a plurality of engaged sphere pairs; and
e. bonding the engaged sphere pairs together.

4,206,867

CONTAINER AND BLANK FOR CONSTRUCTING SAME

Finn Skjelby, Spikkestad, Norway, assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Dec. 21, 1978, Ser. No. 972,191
Int. Cl.[2] B65D 5/74
U.S. Cl. 229—17 G 8 Claims



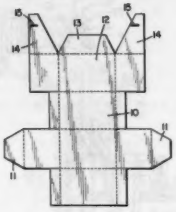
1. A blank (10) for constructing a container adaptable to being folded into a "slant top" container or a "flat top" container, the blank comprising: body panels including front (26) and back (22) panels and a pair of side panels (24,28), one (24) of which joins the front and back panels; bottom end closure panels (44,46,48,50) connected to lower ends of the body portion panels; top end closure panels connected to upper ends of the body portion panels; said top end closure panels including front (74) and back (76) (gable) triangular panels respectively connected to the top ends of the front and back panels of the body portion and also including a pair of lower closure panels (84,90) respectively connected to the top ends of the side panels of the body portion; a pair of fold back panels (98/100,118/120) panels located on opposite sides of each triangular panel; a pair of upper closure panels (88,94) respectively connected via horizontal score lines (82,80) to the lower closure panels; and a pair of single panel infold lips (106/108,126/128) respectively connected via respective single score line portions (78,80) to respective pairs of fold back panels, the single score line portion (80) between one of each (108,126) of said pairs of single panel infold lips and the adjacent fold back panels (100,118) being located lower than and parallel to the single score line portion (78) between the other of each of said pairs of single panel infold lips (106, 128) and the other pair of fold back panels, thereby causing said foldback panels to be of different sizes, enhancing the foldability of the upper closure panels toward the side bearing the lower score lines.

4,206,868

BOX TRAY

George B. D. Stephens, 1250 27th St., Newport News, Va. 23607

Filed Feb. 13, 1979, Ser. No. 12,057
Int. Cl.[2] B65D *5/18*
U.S. Cl. 229—33 2 Claims



1. A one-piece foldable blank for forming a box structure comprising:

(a) the standard components of a foldable box blank including sections for the bottom, front and rear walls, end walls, a lid, and flaps on each end wall and lid;

(b) a lid extension connected onto each end of the lid portion of said blank;

(c) each lid extension being foldably engaged with the lid portion of said blank in such a manner as to be folded against the lid in order to be closed within the box when completed, or to be locked with the other lid extension to provide supporting means for the lid portion so that the lid portion may be used as a tray or table;

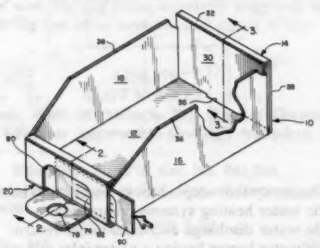
(d) the locking means for the lid extension consisting of a slot provided in each lid extension near the end thereof.

4,206,869

SHELF STORAGE BOX

Michael J. Gurevitz, 9049 N. Bronx, Skokie, Ill. 60076

Filed Apr. 18, 1979, Ser. No. 31,080
Int. Cl.[2] B65D *5/22*
U.S. Cl. 229—34 R 4 Claims



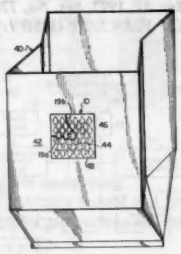
1. A shelf storage box comprising a bottom panel, a back wall formation, first and second side panels, and a front wall formation which form said box with an open top, said front wall formation including a first flap hinged to said first side panel and extending 90° therefrom, a second flap hinged to said second side panel and extending 90° therefrom over said first flap, a foldable panel hinged to said bottom panel and having a first panel section extending upwardly from said bottom panel adjacent said second flap, a short width second panel section hinged to said first panel section and extending over said flaps and a third panel section extending downwardly from said second panel section adjacent said first flap, at least one tab extending from the free edge of said third panel section, said bottom panel having a slot for receiving said tab, said first panel section having a cut extending upwardly from said bottom panel across a portion of said first panel section and then downwardly to said bottom panel to provide, when folded downwardly, a handle formation whereby the box can be easily pulled outwardly on a shelf, a closed loop cut in said handle formation to form a punch out hole therein for receiving a finger and said space formed in said first panel portion in front of said second flap when said handle formation is folded downwardly forming a window, and said box further including a card which is sized to fit within said front wall formation between said second flap and said first panel section and having a portion thereof adapted to be positioned in said window and to have indicia marked thereon indicating the contents of said box.

4,206,870

PRESSURE RELIEF VALVE

Egbert DeVries, Kettering, Ohio, assignor to Quad Corporation, Highland Park, Ill.

Filed Dec. 8, 1978, Ser. No. 968,032
Int. Cl.[2] B65D *33/16*
U.S. Cl. 229—62.5 10 Claims



1. A pressure relief valve for application to the outside wall of a container for controlling the pressure within said container, comprising:

a finite flexible sheet, said sheet being impervious to gas at low pressure differentials, and

an array of adhesive patches bonding said sheet to the container wall and forming a plurality of adhesive-containing and adhesive-free areas, said adhesive-free areas patterned to define channels communicating between the interior and the exterior of said container through an opening in said wall, said opening being larger than one of said adhesive patches, and wherein said array forms a tortuous path of at least one channel through which gas must pass before release from said container,

whereby, in response to a build-up of internal gas pressure, the part of the flexible sheet above the adhesive-free area adjacent the opening in said container wall raises to allow exit of the gas through said tortuous paths, and upon relief of the internal gas pressure, said flexible sheet returns to its original closed position to prevent ingress of atmospheric gases.

4,206,871

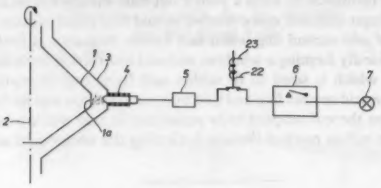
LEAKAGE INDICATOR FOR CENTRIFUGE

Vilgot R. Nilsson, Hagersten, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Sep. 25, 1978, Ser. No. 945,639
Claims priority, application Sweden, Dec. 28, 1977, 7714810
Int. Cl.[2] B04B *1/14*; G08B *21/00*
U.S. Cl. 233—19 R 4 Claims

1. In combination with a centrifuge including a rotor having a discharge opening through which solid material is discharged intermittently from the rotor, a device for detecting leakage from the rotor and comprising vibration-sensing means mounted radially outside the discharge opening in a position

such that liquid leaking through the opening is thrown from the rotor towards said means, during operation of the centrifuge, the sensing means including means for emitting a signal in response to impact of liquid thereon.



4,206,872

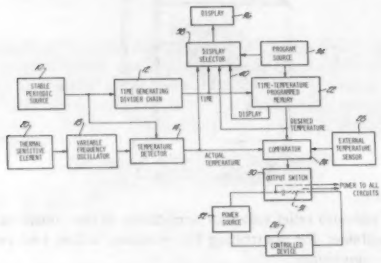
ELECTRONIC THERMOSTAT

Michael R. Levine, 3605 Frederick Dr., Ann Arbor, Mich. 48105

Filed Mar. 17, 1977, Ser. No. 778,376

Int. Cl.[2] F23N *5/20*; H05B *1/02*

U.S. Cl. 236—46 R **17 Claims**



1. A thermostat for controlling the application of electrical power to a temperature modifying load, comprising: means for generating an electrical signal having a characteristic which varies as a function of the ambient temperature on the thermostat; a clock operative to generate digital electrical signals having values representative of real time; a programmable, digital memory; means for loading said memory with a plurality of separate programs each comprising digital signals representating desired temperature at particular times over a repetitive time cycle; means for selecting one of said plurality of programs, circuitry for applying the output of the clock to the memory to generate a digital electric signal representative of the desired temperature at a particular time as stored in said selected program; means for receiving the electrical signal having a characteristic which is a function of ambient temperature and the output of the memory and for generating a control signal for said temperature modifying devices as a function of their difference.

4,206,873

METHOD OF MAKING A THERMOSTAT CONSTRUCTION WITH AN ANNULAR SEALING MEMBER

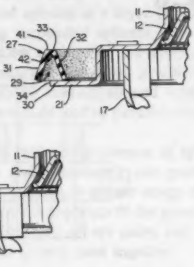
Boyd P. Sliger, Concord, Tenn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Sep. 12, 1978, Ser. No. 941,543

Int. Cl.[2] G05D *23/12*

U.S. Cl. 236—34.5 **20 Claims**

1. In a method of making the combination of a thermostat construction having an annular flange secured between an engine block and a water outlet housing, said flange having an annular sealing member with a generally U-shaped cross-sectional configuration disposed about the peripheral end of said flange and with said peripheral end being received in the bight of said U-shape to seal said flange to said block and to said housing, the improvement comprising the steps of forming said annular sealing member to initially have its said bight facing at an angle to its said bight in its assembled condition with said flange, and assembling said annular sealing member to said peripheral end of said flange by turning said bight from its initial facing direction to face and receive said peripheral end of said flange therein.



4,206,874

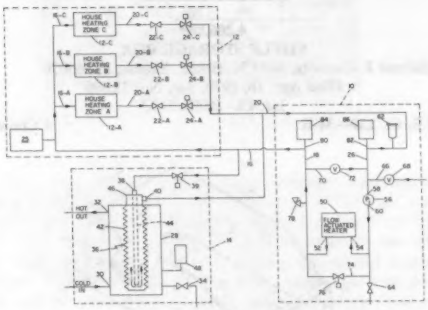
HEATING

Joseph W. Semple, Boylston, Mass., assignor to NEGEA Energy Products, Inc., Cambridge, Mass.

Filed Jan. 9, 1978, Ser. No. 867,713

Int. Cl.[2] F24D *3/08*

U.S. Cl. 237—8 C **13 Claims**



1. A heater system adapted for connection to both space and domestic water heating systems comprising:

a main water discharge and main water return:

a main water heater having a water inlet and a water outlet and operative for heating water flowing therethrough;

a main pump connected in series with said main heater between said discharge and return;

a bypass conduit connected across said main pump and main heater in parallel with said main discharge and return;

a balance valve mounted in said bypass conduit; and,

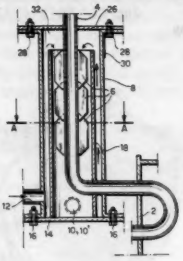
a control system adapted for connection to each of said space and domestic water heating systems and operative to activate the main pump and cause the main heater to heat water flowing therethrough and to cause heated water to flow through a respective one of said space and domestic water heating systems when the temperature sensed by a temperature sensing control in said respective one is below a respective predetermined temperature level,

said balance valve being effective to maintain a dummy load thereacross.

4,206,875
HEAT RECOVERY APPARATUS

Giacomo Grasso, Moncalieri, Italy, assignor to Fiat Societa per Azigni, Turin, Italy

Filed Sep. 7, 1978, Ser. No. 940,236
Claims priority, application Italy, Sep. 27, 1977, 69122 A/77
Int. Cl.[2] F24B 7/04
U.S. Cl. 237—55 1 Claim



1. A recuperator for recovering heat from hot exhaust gases flowing through a flue; including an inner and an outer cylindrical wall surrounding said flue, said walls defining between them an outer annular space and said inner wall and said flue defining between them an inner cylindrical space; said outer wall having inlet means to said outer annular space and said inner wall having outlet means from said inner annular space adjacent said inlet means; and means defining a passage between said annular spaces at their ends remote from said inlet means and said outlet means, whereby gas to be heated in the system introduced through said inlet means flows along said outer annular space to said outlet means and wherein;

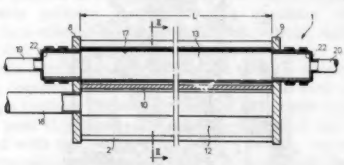
said flue within said inner annular space is divided into a plurality of sections; and

said recuperator further includes a plurality of groups of radial fins, each of said fins being fixed to, and extending longitudinally of said flue within said inner annular space, the fins of each of said groups being spaced circumferentially around a respective section of said plurality of sections of said flue and being angularly staggered with respect to the fins of an adjacent said group of fins.

4,206,876
SLOT NOZZLE

Werner Koch, Wald Michelbach, Fed. Rep. of Germany, assignor to Bruckner Apparatebau GmbH, Erbach, Fed. Rep. of Germany

Filed Sep. 18, 1978, Ser. No. 943,006
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1977, 2745900
Int. Cl.[2] B05B 1/04
U.S. Cl. 239—455 17 Claims

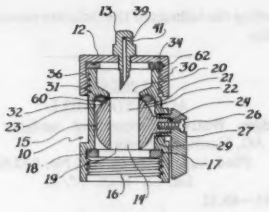


1. A slot nozzle for a flow medium in which the slot width is adjustable by relative adjustment of two sidewalls defining the slot, on the one hand by the pressure of the flow medium disposed in the slot nozzle acting in the sense of opening of the slot and on the other hand by the counter pressure of a fluid acting in the sense of closing the slot, and at least one of the two sidewalls defining the slot being pivotal about an axis extending parallel to the slot, characterized in that the two sidewalls defining the slot are connected together by a connecting wall extending over the entire working length of the slot nozzle parallel to the slot, said connecting wall including a zone which extends over its entire length and is weakened in its material thickness and which is resiliently deformable and forms the pivot axis.

4,206,877
WATER MIST GENERATOR

Philip J. Hoza, III, 688 Cherry St., Winnetka, Ill. 60093

Filed Jul. 29, 1977, Ser. No. 820,231
Int. Cl.[2] B05B 1/26, 1/30
U.S. Cl. 239—524 1 Claim



1. A mist generator comprising:

a hollow body having a female end fitting on one end for connection with a garden hose and external threads on the other end;

a hollow cap having internal threads complementary to and engageable with said external threads;

said hollow cap having an unobstructed flat upper surface;

a rotatable valve positioned within said body and moveable between an open position in which flow of water is permitted through said body and a closed position in which said flow is blocked;

a nozzle mounted in said cap projecting above said surface and having a wedge shaped opening defining an upper surface and a lower surface diverging downward and outward;

a tubular passage of small diameter in said nozzle providing communication between said hollow body and said wedge shaped opening;

the upper surface being oriented substantially perpendicular to said tubular passage whereby the flow of water through said tubular passage will impact said upper surface to create a freely dispersible mist of tiny discrete droplets having low kinetic energy.

4,206,878
BENEFICIATION OF IRON ORE

James E. Forciea, Coleraine, Minn., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1975, Ser. No. 572,601
Int. Cl.[2] B02C 23/22
U.S. Cl. 241—20 3 Claims

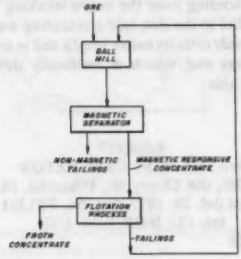
1. Method of beneficiating iron ore comprising

(a) grinding said iron ore to a size of minus 48 mesh,

(b) passing the sized ore to a magnetic separator to separate a magnetic-responsive concentrate and remove a nonmagnetic portion therefrom,

(c) passing the magnetic-responsive concentrate therefrom to a flotation process and separating the magnetic-responsive concentrate into a relatively high iron content concentrate in the froth and a relatively low iron tailing,

(d) recovering the high iron content concentrate in the froth of the flotation process and



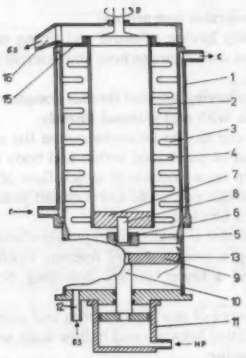
(e) recycling the tailings of the flotation process to the grinding step.

4,206,879

AGITATOR MILL

Armin Geiger, Wattwil, Switzerland, assignor to Gebrueder Buehler AG, Uzwil, Switzerland

Filed Aug. 10, 1978, Ser. No. 932,565
Int. Cl.[2] B02C *17/16*
U.S. Cl. 241—46.11 **16 Claims**



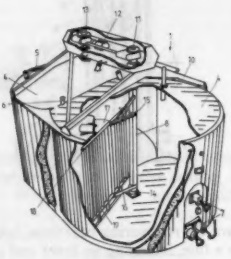
1. An agitator mill for continuous grinding and dispersion of solid constituents suspended in a liquid, comprising: a grinding container, an agitator mounted for rotation in the grinding container, a charge of discrete grinding elements within the grinding container, the agitator having agitator elements extending into the charge of grinding elements to set them in motion upon rotation of the agitator, an inlet into the grinding container for flow of grinding stock to the charge of grinding elements and an outlet from the grinding container for flow of grinding stock away from the charge of grinding elements, pressure means for the application of pressure to the charge of grinding elements to vary the volume of the charge of grinding elements, the agitator having a shaft for rotating it, the shaft having a drive end extending exteriorly of the grinding container from one end of the grinding container, a drive bearing in the region of the said one end of the grinding container to enable rotation to be applied to the shaft in the region of the drive end of the shaft, the shaft having a bearing end remote from said drive end and extending towards the pressure means, an end bearing for the bearing end of the shaft, support means for carrying the end bearing, said support means being fast with the grinding container, the said end bearing being disposed within the charge of grinding elements and spaced from the pressure means, and means for urging the pressure means towards the end bearing thereby to vary the volume of the charge of grinding elements.

4,206,880

FOOD PROCESSING APPARATUS

Graham B. Stanton, Palmerston North, New Zealand, assignor to Mauri Brother & Thomson (N.Z.) Limited, Auckland, New Zealand

Filed May 23, 1978, Ser. No. 908,686
Int. Cl.[2] B01F *F/32*
U.S. Cl. 241—98 **10 Claims**



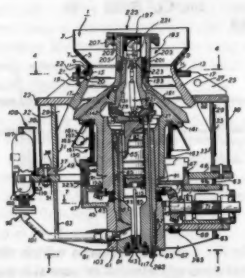
1. Food processing apparatus comprising a vat, at least one rotatable vertical shaft disposed within said vat, drive means operable to rotate the shaft in either direction, frame support means projecting from said shaft, a cutter/stirrer frame with a plurality of blades incorporated therein, means pivotally mounting said cutter/stirrer frame on said frame support means at a point less than half the width of the cutter/stirrer frame from said shaft and means for restricting pivotal movement of said cutter/stirrer frame relative to said frame support means between a first extreme position in which said cutter/stirrer frame extends substantially as a radius from said shaft and a second extreme position in which said cutter/stirrer frame is located at an angle to said radius, said extreme positions of said cutter/stirrer frame being assumed when said shaft is rotated in opposite directions respectively. .

4,206,881

CONE CRUSHER ANTI-SPIN MECHANISM

Karl Werginz, Dunwoody, Ga., assignor to Litton Systems, Inc., Columbia, S.C.

Division of Ser. No. 880,060, Feb. 22, 1978, Pat. No. 4,168,036. This application Mar. 19, 1979, Ser. No. 22,225
Int. Cl.[2] B02C *2/04*
U.S. Cl. 241—207 **6 Claims**



1. An anti-spin mechanism for a cone crusher, said cone crusher including a gyratory mantle which is urged to rotate in a first direction when said crusher is under load and in a second

direction, opposite to said first direction, when said crusher is not under load, comprising:

a reservoir containing a fluid;

a fluid pump positioned within said reservoir and coupled to said mantle, said pump adapted to urge said fluid in a first flow direction when said mantle rotates in said first direction and to urge said fluid in a second flow direction, opposite to said first flow direction, when said mantle rotates in said second direction, the force with which said pump urges said fluid to flow being directly related to the force with which said mantle is urged to rotate;

a first valve positioned in said reservoir and coupled to said fluid pump, said first valve arranged to provide a fluid flow path, thereby permitting said mantle to rotate, only when said pump urges said fluid to flow in said first flow direction; and

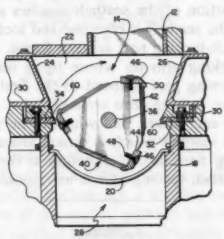
a second valve positioned in said reservoir and coupled to said fluid pump, said second valve arranged to provide a fluid flow, thereby permitting said mantle to rotate in said second direction, only when said pump urges said fluid to flow in said second direction with a force exceeding a predetermined magnitude.

4,206,882

GRANULATOR BLADE CONSTRUCTION

William Barnes, South Attleboro; Roy W. Gerstenberg, Norfolk, both of Mass.; Gomer E. Kropa, Midland, Mich., and Thomas M. Oakes, Providence, R.I., assignors to Leesona Corp., Warwick, R.I.

Filed Oct. 2, 1978, Ser. No. 947,772
Int. Cl.² B02C *18/16*
U.S. Cl. 241—221 **10 Claims**



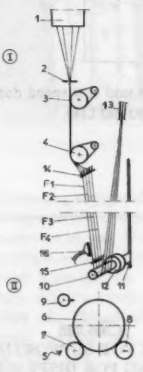
1. A device for the size reduction of material comprising a frame, a chamber, a rotor mounted for rotation about an axis within said chamber, cutting means affixed to said rotor, bed knife means mounted on said frame at least on the downstroke side for projection into said chamber for cooperative cutting relationship with said cutting means as said rotor is driven, said cutting means including a rotor blade extending laterally across the face of said rotor with the forward cutting edge thereof defining the circumferential cutting plane of said rotor, said rotor blade of an overall generally chevron configuration having side portions thereof laterally angularly slanted towards each other to define a central peak thereof, said peak being further arcuately displaced from a radial plane passing through the laterally spaced sides of the blade in a rotational direction opposite to that of said rotor, said bed knife means including a similarly chevron shaped bed knife blade disposed with the peak thereof directed opposite to that of said rotor blade and with the cutting edge thereof radially outwardly offset from said rotor blade and further disposed with the peak thereof arcuately displaced from the sides thereof in the opposite direction of the displacement of said rotor blade such that the cutting edges of said blades may progressively pass across each other in evenly spaced relationship and form a progressively flatter generally trapezoidal opening therebetween upon such relative motion whereby articles to be cut thereby are contacted by said blades at laterally spaced locations on opposite surfaces thereof so as to clamp said articles within said opening.

4,206,883

METHOD AND APPARATUS FOR TRANSFERRING TEXTILE YARNS FROM A FIRST TREATMENT ZONE TO A SECOND

Bernard Isoard, Lyons, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Oct. 3, 1978, Ser. No. 948,102
Int. Cl.² B65H *54/02*
U.S. Cl. 242—18 G **11 Claims**



1. A method of transferring at least one moving textile yarn, fed and treated continuously, from a first treatment zone to a second treatment zone which are separated from one another by a distance such that an operator located in one of the two zones cannot reach the other zone, said method comprising the steps of:

removing the yarn at the first treatment zone, whilst keeping it under tension,

moving of the yarn from the first to the second treatment zone by means of a component which is movable between these two zones, whilst the yarn continues to be removed, and

seizing the yarn at the second treatment zone so as to position it in the desired place.

4,206,884

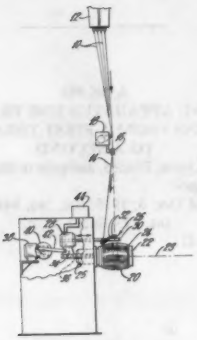
METHOD AND APPARATUS FOR FORMING A WOUND STRAND PACKAGE

John E. Myers, Anderson, S.C., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jun. 6, 1979, Ser. No. 46,079
Int. Cl.² B65H *54/02, 54/28*
U.S. Cl. 242—18 G **8 Claims**

1. The method of forming a wound strand package (20) of the type in which a strand (14) is advanced to a rotating collet (22) to form a wound package (20) thereon, and wherein said strand (14) is reciprocated in the direction of the axis of rotation (23) of said collet (22) by the action of a strand oscillator (26) rotating at a first speed to lay said strand (14) onto said collet (22) in a helical pattern, and wherein said strand oscillator (26) is reciprocated in the direction of said axis of rotation

(23) to lay said strand (14) onto said collet (22) in courses, the improvement comprising: rotating said strand oscillator (26) at



a second speed less than said first speed during the winding of the first course of said strand (14).

4,206,885

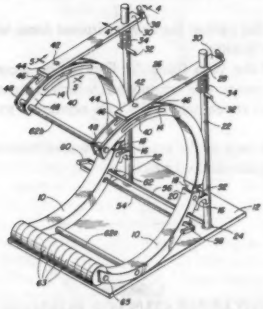
PORTABLE DEVICE FOR SUPPORTING A ROLL OF SHEETING FOR DISPENSING

Lawrence P. Salvino, 285 Milton Rd., Waucanda, Ill. 60084

Filed Jul. 2, 1979, Ser. No. 54,158

Int. Cl.[2] B65H *25/02, 17/12*

U.S. Cl. 242—55 **8 Claims**



1. A device for supporting a roll of aluminum sheeting comprising a base, a relatively wide, stationary, concave-shaped, inverted U-channel lower member anchored to said base, a relatively wide, convex-shaped upper member pivotally secured at one end to one end of said concave member, a vertical post, an arm, one end slidably mounted on the upper end of said post, the opposite end lying against said convex member, whereby said convex arm may be adjusted toward and away from said concave member, means for anchoring one end of said concave member to said post, a pin secured adjacent the upper end of said post, a compression spring on said post between said arm and said pin to normally urge said arm upwardly on said post, and means to lock said arm to said post.

4,206,886

LOCKING DEVICE FOR SEATBELT SYSTEMS

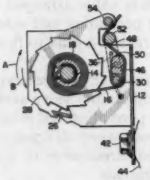
Noritada Yoshitsugu; Jun Yasumatsu; Mitsuaki Katsuno, all of Toyota, and Yoshio Tsujiuchi, Nagoya, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai Rika Denki, both of Aichi, Japan

Filed Jan. 4, 1979, Ser. No. 871

Claims priority, application Japan, Mar. 28, 1978, 53-40620[U]

Int. Cl.[2] B65H *75/48;* **A62B** *35/02*

U.S. Cl. 242—107.2 **2 Claims**



1. A seatbelt locking device for a vehicle comprising:

a frame which is attached to the vehicle;

a retractor shaft which is supported on the frame and which retracts a passenger-restraining seatbelt;

a first locking arm which is pivotably supported on the frame;

a first seatbelt-turning part coupled to the tip of the locking arm and around which an unretracted portion of the seatbelt is turned, said first seatbelt-turning part being further coupled to said first locking arm such that said first locking arm is caused to rotate when the tension on the unretracted portion of the seatbelt reaches a specified value whereby the seatbelt is clamped and locked between the first seatbelt-turning part and the frame; and

a second locking arm on whose tip is installed a second seatbelt-turning part fastened to the first locking arm so that the two locking arms are inclined at a specified angle relative to each other, and wherein the unretracted portion of the seatbelt which is turned around the first seatbelt-turning part in one direction is turned around the second seatbelt-turning part in an opposite direction.

4,206,887

SAFETY BELT WITH ROLLER ARRANGEMENT

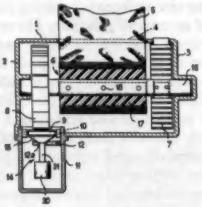
Daniel de Rosa, Le Mesnil Saint Denis, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Dec. 1, 1978, Ser. No. 965,318

Claims priority, application France, Dec. 7, 1977, 77 36815

Int. Cl.[2] A62B *35/02;* **B65H** *75/48*

U.S. Cl. 242—107.4 A **7 Claims**



1. A safety belt assembly which comprises:

a belt winding roller;

a belt winding housing within which said roller is disposed;

an element for rigidly locking said roller with respect to said housing;

a resilient, compressible sleeve mounted on said roller wherein said sleeve comprises a first form having a volume enveloped by a strap portion of the safety belt, and a second form upon a traction force being applied to said belt, comprising a smaller volume enveloped by said strap portion, wherein transition from the first form to the second form occurs due to said traction force being applied to said belt subsequent to locking of said roller; and

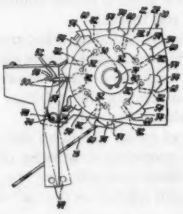
means separate from said sleeve for securing said belt to said roller.

4,206,888

TENSION RELIEVER FOR SEAT BELT RETRACTOR

Joseph J. Magyar, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1978, Ser. No. 965,311
Int. Cl.[2] A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.7 **2 Claims**



1. In an automotive vehicle having a restraint belt for restraining an occupant in a vehicle seat, a housing, a belt reel rotatably mounted on the housing, a winding spring urging belt winding rotation of the reel to pull the belt taut against the occupant, and a locking mechanism effective to prevent belt unwinding only in response to a sensed emergency condition so that the occupant may normally lean forwardly in the seat, the improvement comprising:

reel latch means on the housing;

pawls means mounted on the reel for rotation therewith and movable between an extended position engageable with the reel latch means to prevent belt winding reel rotation by the winding spring and thereby relieve the taut condition of the belt against the occupant and a retracted position free of the reel latch means permitting belt winding reel rotation, said pawl means being centrifugally moved to the extended position upon belt winding rotation of the reel at a velocity induced by the winding spring to thereby engage with the latch means and said pawl means remaining at the retracted position free of the latch means when the occupant retards the velocity of belt winding reel rotation to a velocity less than induced by retarded winding spring effort;

a reset abutment on the housing engageable by the extended pawl means to return the extended pawl means to the retracted position upon subsequent unwinding rotation of the reel;

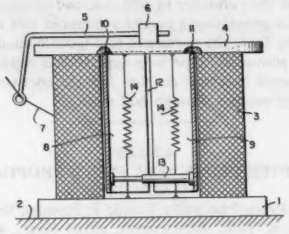
and yieldable means mounting the reel latch means on the housing and adapted to permit selective disengagement of the reel latch means from the extended pawl means irrespective of belt unwinding rotation.

4,206,889

COIL UNWINDING DEVICE

Georg Adelhardt; Karl Buettner; Walter Feichtner, all of Nuremberg; Herbert Hasselberg, Lauf, and Andreas Voelkel, Nuremberg, all of Fed. Rep. of Germany, assignors to Kabel- und Metallwerke Gutehoffnungshuette AG, Fed. Rep. of Germany

Filed Jan. 18, 1979, Ser. No. 4,334
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1978, 2805346
Int. Cl.[2] B65H *49/00*
U.S. Cl. 242—128 **6 Claims**



1. A device for unwinding elongated material from a wound coil having an opening interior, comprising:

a plate for placement on an end of the coil;

guide means mounted on the plate for guiding elongated material unwound from the coil;

a shell for insertion into the interior of a wound coil comprised of at least two elongated arcuate members, said arcuate members having one end thereof pivotally mounted to the plate; and

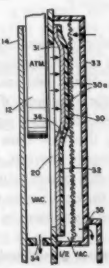
means connected to said arcuate members to apply an outwardly pressing force to said arcuate members, whereby upon insertion into the coil said arcuate members are pressed outwardly against a coil interior.

4,206,890

TAPE POSITION SENSING APPARATUS FOR MAGNETIC TAPE DRIVE

William M. Barton, Jr., San Diego, and Martin D. Gray, La Jolla, both of Calif., assignors to Cipher Data Products, Incorporated, San Diego, Calif.

Filed Aug. 31, 1978, Ser. No. 938,380
Int. Cl.[2] G11B *15/58*
U.S. Cl. 242—184 **9 Claims**



1. A magnetic tape drive including improved variable capacitor apparatus for sensing the position of a magnetic tape in a vacuum column of said drive, wherein said apparatus comprises;

a hollow column having an open end for receiving a loop of

said magnetic tape, and having a slot running along the length thereof;

an enclosure extending over said slot to an outside surface of said vacuum column;

a rigid conductive strip of wire mesh lying within said enclosure spaced apart from and parallel to said slot to form a first plate of said variable capacitor;

a flexible conductive strip, within said enclosure, lying between and parallel to said slot and said rigid conductive strip to form a second plate of said variable capacitor;

means for generating a vacuum in the portion of said column lying beneath said magnetic tape loop to thereby force a corresponding portion of said flexible conductive strip against the perimeter of said slot; and

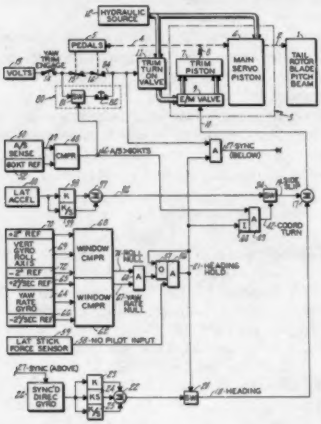
means for generating a partial vacuum in said enclosure to thereby force the portion of said flexible conductive strip lying above said tape loop against said rigid conductive strip such that any air that lies therebetween instantaneously escapes through said mesh.

4,206,891

HELICOPTER PEDAL FEEL FORCE PROPORTIONAL TO SIDE SLIP

Ricardo L. Perez, Plantsville; Ronald E. Barnum, Trumbull, and Franklin A. Tefft, Killingworth, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 26, 1978, Ser. No. 955,724
Int. Cl.[2] B64C *11/34*
U.S. Cl. 244—17.13 **2 Claims**



1. An improved helicopter, yaw channel having a yaw servo including a trim piston resiliently connected to the yaw pedal linkage, an electrically controlled yaw trim valve for controlling, when actuated, the position of the yaw trim piston in response to electric autopilot input signals thereto, a trim turn on valve for actuating the yaw trim valve by supplying hydraulic fluid under pressure thereto, a pilot actuable trim engage switch in series with pedal-actuated disengage switches for operating the trim turn on valve whenever the pedals are not moved from their rest position, in which the improvement comprises:

means providing a cruise signal indicative of the helicopter flying at a speed in excess of a predetermined cruise speed; and

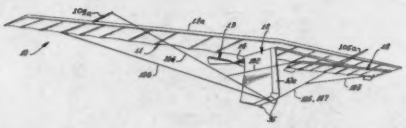
means including a bypass switch responsive to said cruise signal for short-circuiting said pedal-actuated trim disengagement switches in response to said cruise speed signal indicating the helicopter is flying in excess of said predetermined cruise speed, whereby operation of the pedals requires a force to overcome said resilient connection to said trim piston.

4,206,892

LIGHTWEIGHT AIRCRAFT

Paul B. MacCready, Jr., 1065 Armada Dr., Pasadena, Calif. 91103; Peter B. S. Lissaman, Pasadena, and James D. Burke, Sierra Madre, both of Calif., assignors to Paul B. MacCready, Jr., Pasadena, Calif.

Filed Jul. 24, 1978, Ser. No. 927,020
Int. Cl.[2] B64C *9/06, 3/06, 31/04*
U.S. Cl. 244—45 A **12 Claims**



1. In an aircraft having structure including a fixed wing and a fuselage, the improvement comprising:

(a) a stabilizer spaced from the wing and which extends generally horizontally in straight forward flight;

(b) support means permitting the stabilizer to roll about an axis extending generally in the forward direction;

(c) and aircraft yaw control means connected to the stabilizer to control roll thereof,

(d) said support means including a boom connected to said structure and projecting generally in said forward direction, and a first hinge connection between said boom and said stabilizer suspending the stabilizer to roll independently of and relative to the boom,

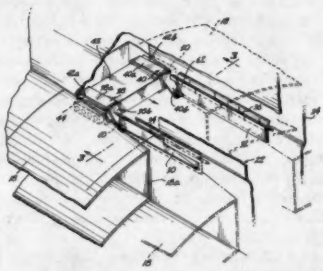
(e) said yaw control means including ailerons on the stabilizer and cables extending lengthwise of the boom to be turned near the hinge connection and proximate the stabilizer to control said ailerons as the stabilizer rolls relative to the boom.

4,206,893

SEAL CLOSURE FOR SLOT IN ENGINE MOUNTING STRUT

Philip Howard, Edmonds, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 27, 1978, Ser. No. 946,118
Int. Cl.[2] B64D *27/00*
U.S. Cl. 244—54 **12 Claims**



1. In a jet aircraft having an engine, on a strut, the engine having a cowl and at least a portion of the cowl being translatable between a forward position and an aft position spaced from said forward position, the strut having a slot formed therein for receiving the translatable portion of the cowl as the cowl portion translates from said forward position to said aft

position, an improved apparatus for blocking said slot when said cowl portion is in said forward position comprising:

a door;

first means for mounting said door on said strut adjacent said slot for swinging movement of said door about an axis substantially parallel to the direction of translation of said cowl portion between a first position in which said door blocks said slot and a second position wherein said door is spaced from said slot;

second means associated with said door and mounted to said cowl for transforming the translational movement of said cowl portion into swinging movement of said door so that said door swings from said first position to said second position in reaction to the translation of said cowl portion from said forward position to said aft position.

4,206,894

AIRCRAFT CONTROL

Walter Becke, Wëëningerstr. 15, Fürstenzell, Fed. Rep. of Germany

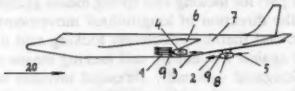
Continuation of Ser. No. 813,505, Jul. 7, 1977, abandoned, which is a continuation of Ser. No. 658,056, Feb. 13, 1976, abandoned.

This application Feb. 5, 1979, Ser. No. 9,569

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1975, 2506974

Int. Cl.[2] B64F *1/36*; B64C *15/00*

U.S. Cl. 244—114 R **5 Claims**



3. An aircraft vehicle having at least one engine for forward movement of the craft and having a fuselage and wings and comprising air propelling means mounted thereon separately from said engine and having at least two exhaust openings arranged side-by-side under the bottom of and only in the rear half of the fuselage and the wings for blowing air in the direction frontally opposite to the direction of the craft's relative wind beneath the craft and substantially parallel to the lower surface thereof to provide an aerodynamic lift cushion below the craft during take-off, landing, emergency landing and flight.

4,206,895

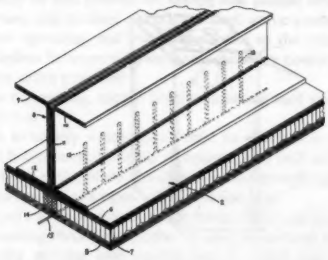
LOOP-TENSION JOINT

Nejat A. Olez, 6510 Ocean Crest #307, Rancho Palos Verdes, Calif. 90274

Filed Mar. 30, 1978, Ser. No. 891,912

Int. Cl.[2] B64C *3/26*

U.S. Cl. 244—123 **4 Claims**



2. A reinforced structural joint for a composite structure comprising:

(a) at least one skin panel;

(b) two upstanding members bonded to said skin panel and having abutting surfaces bonded together forming a bond line where the surfaces abut: and

(c) a unitary high-strength filamentary member extending through said skin panel into said bond line between said abutting surfaces of said upstanding members in the form of spaced-apart loops which double back upon themselves.

4,206,896

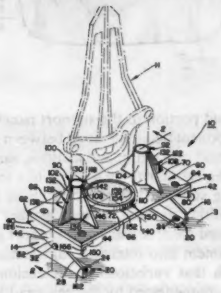
MOUNT FOR A POWER RESCUE TOOL

Joseph A. Cadillac, and John G. Cadillac, both of 314 Lake St., Upper Saddle River, N.J. 07458

Filed Nov. 28, 1978, Ser. No. 964,159

Int. Cl.[2] F16M *11/00*

U.S. Cl. 248—310 **5 Claims**



1. A mount for a power rescue tool comprising:

a plurality of mounting brackets each fixed on a mounting surface;

a plurality of connecting brackets each pivotally connected to one of said mounting brackets;

an elongate platform fixedly connected on top of said connecting brackets for pivotal movement therewith;

a pair of spaced leg holders mounted on said platform on opposite sides of a transverse centerline of said platform for slidingly accommodating legs of a power rescue tool;

a boss mounted on said platform between said leg holders for acommodating a piston cylinder of a power rescue tool, said boss having a cushion therein; and

a plurality of supports supporting each of said leg holders on said platform.

4,206,897

SELF-ADJUSTING SPRING RETAINER

Robert Smith, and Douglas C. Heighton, both of Dayton, Ohio, assignors to White Consolidated Industries, Inc., Cleveland, Ohio

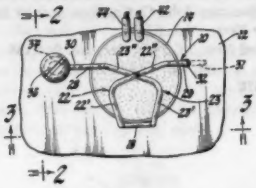
Filed Nov. 22, 1978, Ser. No. 962,910

Int. Cl.[2] F16M *13/00*

U.S. Cl. 248—505 **1 Claim**

1. A spring fastener formed of a single length of resilient wire and adapted for mounting the casing of a circuit component to an apertured support panel, said spring fastener comprising a U-shaped base disposed in a first plane substantially normal to said panel, said base including a bight portion and side portions joined to opposite ends of said bight portion and extending outwardly therefrom away from said support panel, a pair of arms extending from the both side portions of said base and adapted to be substantially parallel to said panel, eacn said arm including a lower section and an upper section, said lower sections being disposed in spaced diverging relation in a common plane, each said upper section being extended in upwardly converging relation and crossing each other in scis-

sors-like fashion adjacent the midportion thereof, respective retainer legs joined by open loop sections to the ends of said upper sections, said retainer legs extending inwardly toward the support panel so as to be disposed, together with their respective open loop sections, in a second plane substantially parallel to said first plane, said legs each terminating in a bent-over end portion and extending in opposite directions in said second plane, one of said end portions defining a hook adapted for limited movable engagement with aperture means in the support panel, the other said end portion terminating in means adapted for reception of retainer means for fixedly attaching



the other said end portion to the support panel, whereby upon the circuit component being received between said legs so as to be engaged by said crossed upper sections, said crossed upper sections changing angularity by scissors-like movement of said arms upon being subjected to outward stress from the circuit component resulting in said spring fastener upper sections exerting an inward force toward said support panel to thereby urge said component into retaining engagement with the support panel, such that variations in dimensions of the circuit component are compensated by the scissors-like movement of said arms.

4,206,898

SPRING SUPPORTS

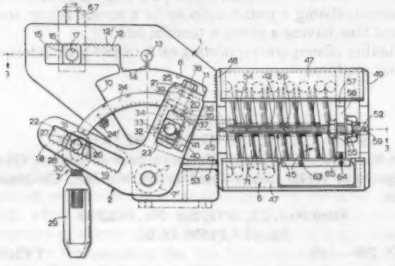
Colin J. Salter, Tividale, England, assignor to Salter Support Systems, Dudley, England

Filed Mar. 10, 1978, Ser. No. 885,220

Claims priority, application United Kingdom, Mar. 10, 1977, 10091/77

Int. Cl.[2] **F16L** *3/00*

U.S. Cl. 248—561 **3 Claims**



1. A spring support of the constant spring force type comprising:

a frame having an elongated slot;

a series of locating formations along a longitudinal edge of said frame slot;

suspension means for suspending said frame from a support for use and including a suspension carrier which engages in and is shorter than said frame slot, has key means engageable with said locating formations, is set in said frame slot at any selected one of a plurality of positions along said frame slot determined by said locating formations and is located in said selected position by interengagement of said key means with said locating formations;

a lever pivoted to said frame and having an elongated slot extending radially of said lever pivot and laterally opposite said frame slot;

a series of locating formations along a longitudinal edge of said lever slot;

a load carrier for connecting a load to said lever and which is engaged in and is shorter than said lever slot, has key means engageable with said locating formations of said lever slot, is set in said lever slot at any selected one of a plurality of positions along said lever slot determined by said locating formations of said lever slot and at varying distances from said lever pivot, and is located in said selected position by interengagement of said key means of said load carrier with said locating formations of said lever slot;

a draw bar attached to said lever;

spring means acting on said draw bar and applying on said lever, through said draw bar, a force which counterbalances the load supported by said load carrier on said lever in use;

a component associated with said spring means being connected to said draw bar, movable with said draw bar in the direction of longitudinal movement of said draw bar and normally urged by said spring means away from said lever;

a fixed part on said frame;

locking means which acts between said spring means and said fixed part for locking said spring means against movement in the direction of longitudinal movememt of said draw bar, and thereby effectively locking said draw bar and lever against movement, said locking means comprising an elongated externally threaded member and nuts threadedly engaged with said threaded member, said threaded member being fixed to said fixed part and extending longitudinally of said draw bar and said component having a part thereof freely co-operating with said threaded member, and said nuts being movable on said threaded member at opposite sides of said component part between released positions in which they are spaced from said component part and leave said component, and thereby said spring means, free to move longitudinally relative to said threaded member, and locking positions in which said nuts are tightened against said component part to prevent said component from moving relative to said threaded member and thereby lock said spring means against longitudinal movement.

4,206,899

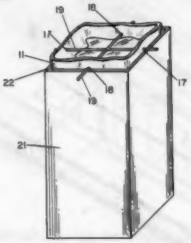
APPARATUS FOR MOLDED ICE SCULPTURE

Arthur L. Whitehead, 693 St. George Rd., San Ramon, Calif. 94583

Filed Jul. 24, 1978, Ser. No. 927,180

Int. Cl.[2] **B22C** *9/22;* **B28B** *7/06;* **B29C** *1/16*

U.S. Cl. 249—139 **2 Claims**



1. Apparatus for forming an ice sculpture, comprising:

a unitary mold having a cavity therein and an internal sur-

face configuration substantially identical to the shape of said ice sculpture, said cavity having an opening in one end of said mold; said mold being constructed of a resilient non-self supporting material that is adapted to be peeled away inside out from said ice sculpture in a unitary manner, beginning at said one end.

a container having upper edges for receiving said mold with said one end uppermost; and

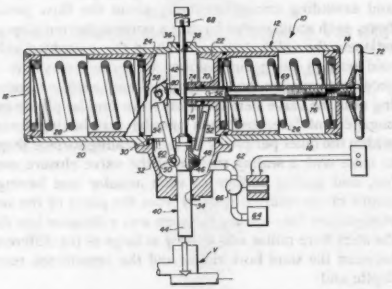
means for supporting said mold in said container with said one end uppermost to retain a charge of liquid which is subsequently frozen therein, said supporting means including at least two elongated wire members and means in the walls of said mold adjacent said one end for passing opposed ends of each of said wire members through opposed walls of said mold so that the mid-portion of each said wire members extends across the one end opening so that the outermost ends of said wire members respectively engage the edges of said container to suspend said mold within said container.

4,206,900

VALVE OPERATOR

Gordon A. Willis, Canoga Park, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 1, 1977, Ser. No. 820,651
Int. Cl.[2] F16K *31/143, 31/50*
U.S. Cl. 251—14 **3 Claims**



1. A valve operator comprising:

a pair of opposed cylinders joined together and defining a piston chamber;

a piston in each cylinder, said pistons being movable between positions closely adjacent one another to spaced from each other corresponding respectively to normally closed valve positions and open valve positions;

a pair of coil springs, one for each piston and located outwardly of said pistons for urging said pistons toward one another and to their normally closed valve positions;

a valve operating rod movable normal to the axis of said cylinders between a normally closed valve position and an open valve position;

means comprising toggle links connecting said pistons and said rod;

means to supply a pneumatic fluid to said piston chamber and between said pistons to counter said coil springs and to move said pistons and thus the rod through said toggle links toward the open valve position; and

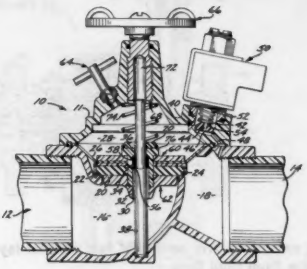
a second rod having one end abutting one of said pistons and extending through the other of said pistons and means for axially moving said second rod to move said abutting piston against the force of said coil springs toward the valve open position in the event of failure of the pneumatic fluid supply.

4,206,901

PRESSURE-ACTUATED VALVE WITH METERING CHOKE

Tom Williams, Corona Del Mar, Calif., assignor to Thompson Manufacturing Co., Los Angeles, Calif.

Filed Oct. 11, 1977, Ser. No. 840,822
Int. Cl.[2] F16K *31/126*
U.S. Cl. 251—35 **1 Claim**



1. In a pressure-actuated diaphragm valve having a body member, a seat mounted within said body member, a plug member co-operable with said seat to form a valve control chamber, inlet and outlet passageways connecting said chamber with a fluid supply line, and pilot means to cause said control chamber to fill with fluid from said supply line to force said plug member against said seat, the improvement therein comprising:

a hollow shaft, with an interior first shoulder, in said plug member which allows a fluid to flow through said plug member and into said valve control chamber;

a stem having an exterior second shoulder and having a smaller cross sectional area than said hollow shaft, said stem being mounted within said body member to protrude into said hollow shaft past said first shoulder; and

a helical coil mounted between said first and second shoulders such that said coil is compacted when said plug member is seated against said seat and is spaced apart when said plug member is positioned away from said seat and said helical coil provides exponentially increasing resistance to the flow of fluid through its coils and into said valve-control chamber as said plug member approaches said seat.

4,206,902

INNER ELEMENT FOR A FLOW REGULATOR

Horst Barthel, Hamburg, Fed. Rep. of Germany, and Robert R. Bell, Houston, Tex., assignors to Vapor Corporation, Chicago, Ill.

Filed Jun. 13, 1977, Ser. No. 805,630
Int. Cl.[2] F16K *31/122*
U.S. Cl. 251—57 **20 Claims**

1. A fluid flow regulator comprising:

a housing having a fluid inlet and a fluid outlet and a cavity therebetween;

a cylinder mounted for reciprocation in said cavity;

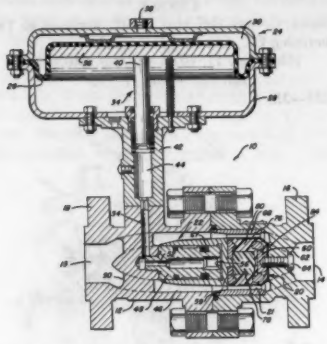
a stationary backing member mounted within said cavity;

means for reciprocating said cylinder;

a valve inner member defined by a plug of elastomer material being mounted adjacent said cylinder for compression thereby so as to radially expand for regulation of said fluid flow,

said plug including a recess on the outer periphery thereof defined by the removable of an outer layer of said plug and an annular layer being mounted in said recess and

secured to said plug to define a continuous outer peripheral surface, and shield means mounted on an end of said



plug extending over an end of said annular layer for protection from fluid flow.

4,206,903

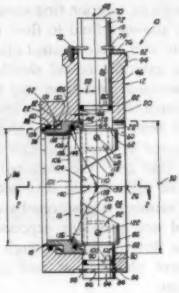
BUTTERFLY VALVE WITH CAM ACTUABLE SEAT

Domer Scaramucci, 3245 S. Hattie, Oklahoma City, Okla. 73129

Filed Aug. 11, 1978, Ser. No. 932,810

Int. Cl.[2] F16K 1/226

U.S. Cl. 251—174 **11 Claims**



1. A valve, comprising:

a valve body having formed therethrough:

a circular flow passage bore formed about a flow axis of the valve; and

a circular valve stem bore having a preselected valve stem bore radius and formed about a stem axis intersecting the flow axis at a right angle, whereby a portion of the valve stem bore forms a first trunnion bore intersecting the flow passage bore and another portion of the valve stem bore, formed coaxially with the first trunnion bore and diametrically opposed thereto with respect to the flow axis, forms a second trunnion bore intersecting the flow passage bore;

a valve stem assembly supported by the valve body for rotation about the stem axis, the valve stem assembly comprising:

a cylindrical first trunnion partially disposed within the first trunnion bore and extending therefrom into the flow passage bore, the first trunnion characterized as having a radius substantially equal to the valve stem bore radius and the first trunnion further characterized as having at least one recess formed in portions of the circular periphery thereof disposed within the flow passage bore and adjacent the intersection of the flow passage bore with the first trunnion bore; and each recess intersecting a portion of the circular periphery of the first trunnion defined by an arc subtending an angle of less than 180° and

a cylindrical second trunnion partially disposed within the second trunnion bore and extending therefrom into the flow passage bore, the second trunnion characterized as having a radius substantially equal to the valve stem bore radius and the second trunnion further characterized as having at least one recess formed in portions of the circular periphery thereof disposed within the flow passage bore and adjacent the intersection of the flow passage bore with the second trunnion bore, and each recess intersecting a portion of the circular periphery of the second trunnion defined by an arc subtending an angle of less than 180° each recess formed in the second trunnion aligned with a recess in the first trunnion in the assembled valve and the recesses in the trunnions having a preselected recess depth;

a valve closure member mounted on the valve stem assembly within the flow passage bore and between one of the recesses formed in the first trunnion and one of the recesses formed in the second trunnion, the valve closure member having formed thereon at least one sealing surface shaped to conform to a portion of a sphere having a preselected sealing surface radius, and the valve closure member positioned on the valve stem assembly so as to center the sealing surface formed on the valve closure member at the intersection of the flow axis and the stem axis;

at least one annular seat disposed within the flow passage bore, each annular seat slidingly engaging the valve body and extending circumferentially about the flow passage bore, each annular seat having a portion thereof disposed adjacent the valve stem assembly in the assembled valve, said portion being dimensioned to permit entry into the recesses formed in the trunnions and said portion terminating near the valve stem assembly in an annular planar stem engagement face, and each annular seat having formed within the inner periphery thereof a sealing surface shaped to mate with a sealing surface of the valve closure member, said sealing surface of each annular seat having a center of curvature displaced from the plane of the stem engagement face toward the stem axis a distance less than the stem bore radius and at least as large as the difference between the stem bore radius and the preselected recess depth; and

means for urging each annular seal toward the stem axis.

4,206,904

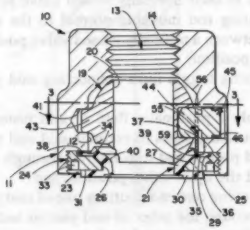
BALL VALVE

Lucian J. Dante, Rockford, Ill., assignor to Nyson Group Marketing, Ltd., Ongar, England

Filed Jan. 13, 1978, Ser. No. 869,357

Int. Cl.[2] F16K 5/06

U.S. Cl. 251—315 **6 Claims**



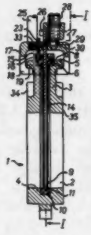
1. A ball valve for use in isolating a hydronic circulator in a fluid heating system, said ball valve including a housing with a

central passage having a port at one end thereof for connection to the heating system and an enlarged ball chamber formed at the other end thereof, a generally spherical ball with a bore extending therethrough, said ball being rotatably mounted within said chamber for movement between open and closed positions respectively, for permitting and blocking the flow of fluid through said housing and means for supporting and sealing said ball within said housing including a retaining plate secured to said housing opposite said port, and a resiliently deformable sealing member captivated on and sandwiching around opposite sides of said retaining plate to form sealing contact with said ball and between said plate and said housing and also for sealing engagement between the circulator and said housing, an opening formed through said housing and communicating with said chamber, a stem mounted within the opening and including inner and outer ends, a key formed in one of said inner end and said ball and a keyway formed in the other of said inner and said ball and receiving said key, said outer end being adapted for turning to rotate the ball between said open and closed positions and a clip having one edge located adjacent said retaining plate and said sealing member, said clip being generally rectangular in shape, bowed to conform with the shape of said chamber adjacent said opening and including a generally U-shaped notch formed in an edge opposite said one edge, an annular groove formed in said stem between the inner and outer ends thereof and said stem being received within said notch at said groove so as to keep said clip from turning with said stem when said ball is moved between said open and closed positions.

4,206,905
GATE VALVE

Otto Dobler, Balsthal, Switzerland, assignor to Von Roll AG, Switzerland

Filed Apr. 17, 1978, Ser. No. 896,504
Claims priority, application Switzerland, Apr. 18, 1977, 4761/77
Int. Cl.[2] F16K *3/02*
U.S. Cl. 251—328 **9 Claims**

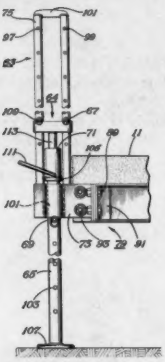


1. A gate valve comprising
a unitary casing with upper and lower edges, with a fluid passageway extending therethrough along a flow axis and with an interior chamber opening on said upper edge, said chamber being in the form of a narrow slot having two parallel side walls oriented perpendicular to said flow axis and having a groove between said side walls which encircles said passageway;
a frame coupled to said casing upper edge;
a gate mounted in said chamber by adjusting means coupled to said frame for moving said gate within said chamber and relative to said casing;
a soft, unitary gasket mounted in said groove having a U-shaped section extending from said lower edge to said upper edge of said casing and having an upper sealing portion generally in the form of an elongated toroid;
a recess extending on each side of said gate defined by said U-shaped section and said upper sealing portion of said gasket; and
a guiding plate mounted in each of said recesses having an upper edge contacting said upper sealing portion.

4,206,906
JACK

Marcus P. Eubank, P.O. Box 7576, Longview, Tex. 75601

Filed Oct. 10, 1978, Ser. No. 949,675
Int. Cl.[2] B66F *7/12*
U.S. Cl. 254—89 H **11 Claims**



1. A jack capable of raising an object from ground level height to a predetermined height, comprising;
a. a superstructure that is adapted to be moved monotonically upwardly with respect to a leg means for raising the object to a predetermined height and that includes:
i. a base adapted to sit on ground level and at such other heights as described to be connected to said objects; said base having a passageway for downward passage of a leg means therethrough;
ii. a structurally strong member having a plurality of stations at a plurality of respective predetermined heights for preventing movement of a lifting means upwardly along said member past a respective station when a top fastening means is emplaced at the respective station;
b. a lifting means for lifting said superstructure and any attached object; said lifting means being movable longitudinally of said member of said superstructure unless encumbered by a top fastening means;
c. top fastening means for fastening said lifting means at a respective predetermined station so as to prevent movement upwardly past the predetermined station on said super structure;
d. connecting means for connecting said superstructure with said object; said connecting means being connected to said superstructure and having means for removably connecting with said object and offset from said object so as to provide an unobstructed path that is as wide as said object beneath said object;
e. extensible leg means for extending downwardly from said superstructure; said leg means being disposed in said passageway in said base; said leg means having a plurality of stations at a plurality of respective heights along said leg means; said leg means having a force pad means for receiving a jacking force;
f. bottom fastening means for fastening said base so as to prevent movement of said base downwardly along said leg means past a predetermined station at which said bottom fastening means is placed; said top and bottom fastening means being alternately operable to a plurality of different stations for jacking up said object to said predetermined height;
g. jacking means for effecting raising of said object; said

jacking means being adapted to be positioned between said force pad means of said leg means and said lifting means for applying the jacking force to force said lifting means and said force pad means apart longitudinally of said superstructure;

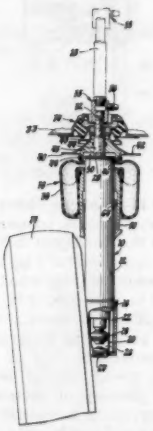
said leg means and said superstructure having a combined length at least as great as said predetermined height such that said object can be raised by extension of said leg means through at least one cycle of fixing said lifting means and jacking downwardly on said leg means and fastening said superstructure along said leg means.

4,206,907

SUSPENSION STRUT WITH PNEUMATIC SPRING

Edward L. Harrod, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1978, Ser. No. 912,551
Int. Cl.[2] F16F 9/04
U.S. Cl. 267—8 R **2 Claims**



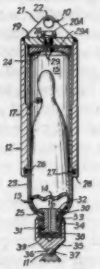
1. An air spring and suspension strut assembly for a vehicle having sprung and unsprung masses comprising a tubular housing, a shock absorber cartridge with a piston and cylinder assembly mounted in said housing, a piston rod operatively connected to said piston and extending axially from said housing, first means securing said pitton rod to one of said masses and second means securing said housing to the other of said masses, a flexible boot having a variable volume pneumatic chamber providing a suspension spring extending around an upper portion of said housing, said boot comprising radially spaced inner and outer parts interconnected by a reversibly folding rolling lobe integral therewith, said outer part having an upper end removably connected to said piston rod, a tubular support sleeve mounted on said tubular housing, clamping means tightly connecting one end of said inner part of said boot to said support sleeve to prevent the escape of air from therebetween and to firmly secure said boot to said support sleeve, said rolling part being radially spaced from the outer surface of said housing and in peripheral contact with the outer surface of said sleeve in a plurality of said position of said piston rod, said outer part of said boot forming the outer circumference of said assembly, a fluid passage means for selectively communicating pressurized fluid to and from said pneumatic chamber, a tubular mounting means secured to said tubular housing and telescopically receiving said support sleeve in a slidable slip-fit procedure axially of said tubular housing for mounting said support sleeve to said tubular housing to facilitate simultaneous linear installation and simultaneous linear removal of said boot and said support sleeve with respect to said tubular housing of said strut and annular pneumatic sealing means interposed between said mounting means and said support sleeve to block the escape of air from therebetween.

4,206,908

VARIABLE VOLUME HYDROPNEUMATIC ACCUMULATOR

Jacques H. Mercier, Paris, France, assignor to The Normand Trust, New York, N.Y.

Filed Nov. 24, 1978, Ser. No. 963,904
Claims priority, application France, Feb. 9, 1978, 78 03623
Int. Cl.[2] F16F 9/08
U.S. Cl. 267—8 R **6 Claims**



1. A variable volume hydropneumatic accumulator comprising a tubular casing having a cylindrical bore open at one end thereof and having a flat closed end, a first point of force application at said closed end, a cylindrical hollow container member axially slidably mounted in said bore in contact with said casing, seal means defined between said casing and container member, said container member including a first flat closed end disposed internally of said bore, and a second closed end extending outwardly of said bore, a second point of force application formed on said second end of said container member, the stroke of said accumulator being the moving together and apart of said first and second points of force application, a gas charging orifice formed in said second end of said container member, restricted liquid flow passage means formed in the wall of said first flat end of said container member, and a deformable bladder separator means disposed in said container member between said ends and providing a liquid chamber and a gas chamber therein in communication respectively with said liquid flow passage means and said gas charging orifice, said separator means is capable of maximum expansion within said container member to substantially fill the diameter of said bore and the length of said continer member, whereby all of said liquid flow passage means restrictedly control a volume of liquid substantially equal to the volume of liquid in said liquid chamber in said container member, and wherein the stroke is limited under compression by the abutting of said closed end of said casing against said first flat end of said container member and the stroke is limited under extension by the effect of liquid suction created by said volume of liquid when said bladder is in said state of maximum expansion within said container member, whereby said container member is prevented from leaving said casing upon extension.

4,206,909

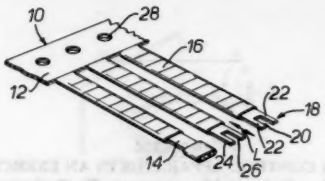
SLEEVE ASSEMBLY

Richard Wintle, 41 Churchward Ave., Swindon, Wiltshire, England

Filed Apr. 17, 1978, Ser. No. 897,010
Int. Cl.[2] B23Q 3/00
U.S. Cl. 269—47 **26 Claims**

1. An assembly comprising a support comprising a base and a plurality of projections extending from the base, and a plurality of sleeves, each sleeve being disposed over a projection

with at least part of the interior of the sleeve in contact with the projection, being retained on the projection against fortuitous displacement therefrom, and being slidable on the projection to allow removal thereof over the free end of the projection, the free end portion of each projection being of such a configuration that, at least in combination with a sleeve positioned thereover and conterminous therewith, there is a cavity for receiving an end portion of a further member.

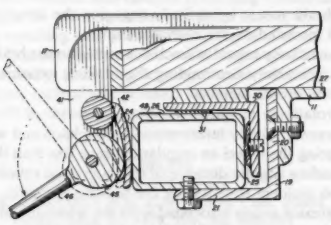


4,206,910

TABLE SAW FENCE SYSTEM

William M. Biesemeyer, 1001 N. 43rd Ave., Lot H46, Phoenix, Ariz. 85009

Filed Jun. 28, 1978, Ser. No. 920,001
Int. Cl.[2] B25B *5/08*; B23Q *3/02*
U.S. Cl. 269—236 7 Claims



1. An improved table saw fence for use on a table saw having a work table and a saw blade extending therethrough, said system comprising:

(a) a support member for attachment to said table;

(b) a guide rail, having a flat top surface and two flat opposing side surfaces, secured to said support member, said guide rail extending parallel to the top surface of said table;

(c) a scale mounted on said top surface and extending therealong;

(d) a fence;

(e) a shoe secured to said fence and slidably engaging the flat top surface of said guide rail out of contact with said scale, said shoe including a pair of spaced apart contact pads attached thereto for sliding engagement with one of said two opposing side surfaces;

(f) an index mounted on said shoe in registration with said scale; and

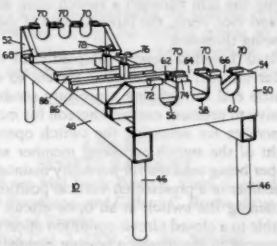
(g) releasable clamping means secured to said fence and extending downwardly therefrom adjacent said guide rail for engaging the other of said opposing side surfaces, said clamping means positioned with respect to said spaced apart contact pads to provide three point clamping on said opposing side surfaces.

4,206,911

TRAILER AXLE RE-CENTERING STAND

Ronald P. Harrison, 424 E. 46th St., Tacoma, Wash. 98404

Filed Sep. 8, 1978, Ser. No. 940,587
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 269—296 5 Claims



1. A stand for the re-centering and shortening of trailer axle suspensions comprising:

two side walls each with a cutout larger than a trailer axle, the cutouts in both walls being aligned such that a trailer axle placed within the cutouts would be perpendicular to the side walls;

a means of holding the two side walls at a given elevation and parallel to one another at a given distance;

four blocks whose dimensions are such that a spring pad of a trailer axle suspension may be placed over the blocks and held in place;

a means of attaching the blocks to the side walls so that each block partially extends over the top of each side of the cutouts on both side walls thereby leaving a distance between each block greater than the diameter of conventional trailer axles but less than the width of the cutout;

two saddles; and

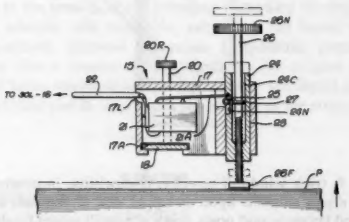
a means of positioning the saddles between the two side walls such that the saddles will support the trailer axle that may be positioned with the cutouts of either side wall.

4,206,912

PAPER SENSING MECHANISM

Rune S. Pearson, Torrance, Calif., assignor to Joseph Wertheimer, Sarasota, Fla.

Filed Apr. 20, 1978, Ser. No. 898,464
Int. Cl.[2] B65H *1/18*
U.S. Cl. 271—154 5 Claims



1. A sensing mechanism adapted to be connected to a printing machine for sensing the level of paper to be printed stored on a movable feed table for sensing and automatically regulating the feed level of the paper on the feed table, the machine including actuable means for automatically stopping the elevation of the feed table, said mechanism comprising

a housing,

an electro-mechanical switch having an operating arm extending outwardly therefrom mounted in the housing for

operating the switch between an electrical conductive and non-conductive condition, the operating arm being defined to be sensitive to a slight pressure exerted thereon for operating the switch,

a tubular member mounted in the housing for restricted sliding movement in the housing, without rotary movement, and adapted to engage the switch operating arm for moving the arm between a switch open and closed position and vice versa, the internal bore of the tubular member being threaded,

a weighted threaded member adapted to be threaded to the tubular member and threaded therein to extend out the opposite end for defining a pressure sensing member responsive to pressure exerted thereon for moving the tubular member for actuating the switch operating arm, the weight of the switch actuating member and the sensing member being selected for normally maintaining the tubular member in a preselected vertical position for normally maintaining the switch in an open circuit condition and movable to a closed circuit condition upon the application of pressure to the pressure sensing member and movable back to the open circuit condition upon the removal of the pressure from the sensing member, and

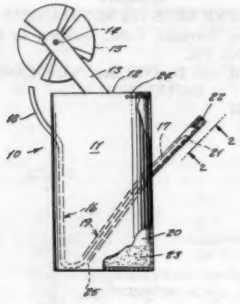
electro-mechanical means connected in electrical circuit with the electro-mechanical switch to be energized and de-energized therethrough, said electro-mechanical means being adapted to be coupled to said actuable means for automatically stopping the elevation of the feed table for actuating same, the engagement of the sensing member with the top of the paper on the rising feed table causes the sensing member to operate the switch to a closed circuit condition whereby the electro-mechanical means actuates said actuable means for automatically arresting the elevation of the paper feed table.

4,206,913

TRICK WINDMILL NOVELTY

Earl A. Howell, Jr., and Earl A. Howell, III, both of 2139 Wilson Ave., Jacksonville, Fla. 32207

Filed Aug. 18, 1978, Ser. No. 934,974
Int. Cl.[2] A63J *23/00*
U.S. Cl. 272—27 B **1 Claim**



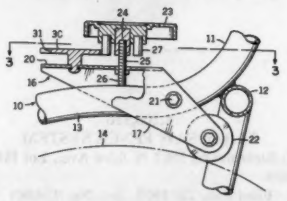
1. A trick windmill novelty, comprising, in combination, a can, a pair of posts upon an upper end of the can, a pin supported between said posts, and a windmill wheel freely pivoted on said pin, a quantity of graphite powder inside said can, a tube assembly protruding at one end from a side of the can, a row of perforated openings in a side of said can located above said sidewardly protruding end of said tube assembly, and means whereby said tube assembly selectively drives said wheel to rotate or said graphite powder to blow out of said perforated openings, said means comprising said tube assembly, consisting of an inner tube and an outer tube, said inner tube extending from said sidewardly protruding end, through said can and out at an opposite side, where it is directed toward said wheel, and said outer tube extends from said sidewardly protruding end ito an interior of said can; said outer tube being located around an outer side of said inner tube, said inner tube having an air intake opening located on a side of said outer tube, while said outer tube has an air intake opening located at its outward end.

4,206,914

WORK CONTROL APPARATUS IN AN EXERCISER

Cleve L. Lee, St. Louis, Mo., assignor to The Perfection Manufacturing Company, St. Louis, Mo.

Filed Apr. 3, 1978, Ser. No. 893,049
Int. Cl.[2] A63B *69/16*
U.S. Cl. 272—73 **3 Claims**



1. A work control apparatus in an exerciser having a frame, and a driven member rotatively mounted on the frame, comprising:

(a) a brake means operatively engaging the driven member and mounted on the exerciser frame,

(b) a rotatively mounted knob connected to the brake means for selectively determining the braking pressure exerted on the driven member,

(c) a rotatively mounted wheel,

(d) means drivingly interconnecting the knob and wheel for rotating the wheel an angular distance less than the corresponding angular distance of the knob upon rotation of the knob incident to adjusting the braking pressure,

(e) indicator means associated with the wheel to indicate the braking pressure applied by the brake means to the driven member at a particularly rotatively adjusted position of the knob,

(f) the means drivingly interconnecting the knob and wheel including:

1. a plurality of angularly spaced notches on the wheel, and

2. a plurality of angularly spaced drive pins on and depending from the knob intermittently engaging the wheel in the notches to rotate the wheel in stepped angular increments upon continuous angular movement of the knob,

(g) the brake means including:

1. a brake frame pivotally mounted to the exerciser frame on a pivot axis,

2. a friction member carried by the brake frame at one side of the pivot axis and engaging the drive member, and

3. a rod attached to the brake frame at the other side of the pivot axis, and

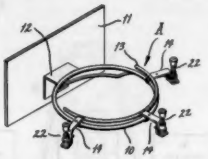
(h) the knob being mounted on the rod with the depending drive pins interfitting the wheel notches and movable rotatively in the notches longitudinally substantially in the direction of the longitudinal axis of the rod for maintaining operative engagement with the wheel upon pivotable movement of the brake frame.

4,206,915

BASKETBALL PRACTICE DEVICE

Carl L. Woodcock, 27 Pearl St., Winchester, Ill. 62694

Filed Mar. 28, 1979, Ser. No. 24,880
Int. Cl.[2] A63B *63/00, 69/00*
U.S. Cl. 273—1.5 A 9 Claims



9. A basketball practice device adapted to be mounted on a standard basketball goal comprising:

(a) a ring shaped member having a radius of curvature substantially equal to the radius of the goal,

(b) a plurality of radially extending legs projecting horizontally from said ring shaped member, wherein said legs have their outermost end bent substantially into an L-shape,

(c) one free-standing element joined to each radially extending leg, wherein said element is mounted on the horizontal base of the L by means of (1) a deformable sleeve mounted on said horizontal base of the L-shaped portion of the leg, into which sleeve said free-standing element is inserted, and (2) a U-shaped clamp, the ends of which clamp are secured to the vertical portion of the L-shaped portion of the leg, the arcuate section of which clamp engages the element through the said deformable sleeve so as to stabilize said element, said element projecting a distance above the goal to prevent basketball shots having a trajectory from reaching said goal by deflecting said shots;

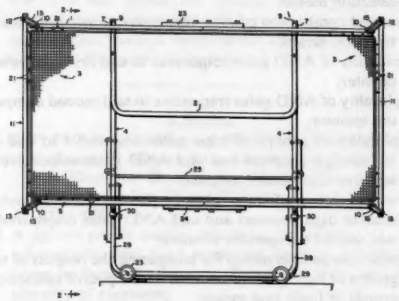
(d) brackets releasably joined to said ring shaped member on the radially extending legs by means of a tightenable fastener, each of said brackets having a groove in one end thereof to engage the goal itself.

4,206,916

TENSIONED NET

William R. Epply, P.O. Box 2133, Dillon, Colo. 80453

Filed May 25, 1978, Ser. No. 909,394
Int. Cl.[2] A63B *69/40*
U.S. Cl. 273—29 A 5 Claims



1. Apparatus comprising:

a pair of primary, opposite frame members;

a pair of secondary, opposite frame members, said frame members being disposed to define a substantially rectangular frame;

web means elastically disposed within said frame and attached at its periphery to each member of each of the pairs of frame members;

linking means pivotally attached to each frame member at each corner of the two pairs of members so as to hold the secondary members substantially at right angles to the primary members;

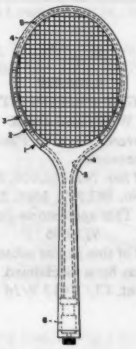
wherein the pivots at the ends of each secondary member are disposed such that increasing the spacing between the primary members swings the linking means so as to increase the spacing between the secondary members, thereby to stretch the web in orthogonal directions.

4,206,917

SPORTS RACQUET

Guy Guillem, 75 rue Mal Foch; Rene A. Vinci, 1, rue des grives, both of 66000 Perpignan, and Gilbert C. Roche, 4 rue des Bois, 95520 Osny, all of France

Filed Oct. 2, 1978, Ser. No. 947,640
Claims priority, application France, Oct. 14, 1977, 77 31865
Int. Cl.[2] A63B *49/00*
U.S. Cl. 273—73 E 11 Claims



1. A racquet comprising a frame provided with a peripheral groove, in the head of the racquet, a liquid-containing flexible tube deformable by the pressure of the liquid therein and located in said groove the said tube being disposed in relation to the stringing so that the tension in the stringing applies a crushing force to the said tube, means for subjecting the liquid in said tube to a superatmospheric pressure, and resilient means for damping the liquid pressure changes in said tube due to sudden variations in the tension of the stringing caused by the impact of a ball, wherein said means for subjecting the liquid to a superatmospheric pressure comprises a hydraulic pressure adjustment device located in the handle of the racquet and capable of being operated by the user to vary the liquid pressure in said tube and thus to adjust the tension of the stringing.

4,206,918

LACROSSE STICK WITH KNURLED METALLIC HANDLE

Fielding H. Lewis, Jr., Towson, Md., assignor to Wm. T. Burnett & Co., Inc., Baltimore, Md.

Filed Jan. 9, 1978, Ser. No. 867,837
The portion of the term of this patent subsequent to Jul. 26, 1994, has been disclaimed.
Int. Cl.[2] A63B *59/02*
U.S. Cl. 273—326 6 Claims

1. A lacrosse stick comprising a head; and a tubular metallic handle of circular or generally circular cross section in which the wall thickness of said tubular handle is within the range

0.060 to 0.090 inch, said head having a weight in the range of 9 to 13 ounces, said handle weighing in the range 0.200 to 0.285

pounds per lineal foot and having knurling substantially over the entire surface of said metallic handle.

4,206,919

REUSABLE TARGET PIGEON WITH UNIVERSAL WITNESS DISK

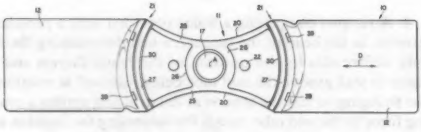
Ludovico L. Della Rovere, Avenida Paez Quinta Ismenia, El Paraiso-Caracas, Venezuela

Continuation-in-part of Ser. No. 762,019, Jan. 24, 1977, Pat. No. 4,133,532, and Ser. No. 882,907, Mar. 1, 1978, and Ser. No. 892,921, Apr. 3, 1978. This application Jun. 30, 1978, Ser. No. 921,006

The portion of the term of this patent subsequent to Jan. 9, 1996, has been disclaimed.

Int. Cl.[2] F41J *9/16*

U.S. Cl. 273—364 **12 Claims**



1. A target pigeon comprising:

a generally flat web formed at a web axis with a central throughgoing hole and having a pair of diametrically opposite ends, said web being of a predetermined maximum width measured in a plane perpendicular to said web axis;

a pair of vanes on said web extending diametrically oppositely from said ends thereof and tipped propeller-fashion to each other;

a cup-shaped witness cap having a substantially circular rim centered on a cap axis and having an axially directed end engageable with said web at said ends thereof and fully exposed at arcuate sections diametrically flanking said web and an opposite axially directed end, and an end plate extending across and closing said rim at said opposite thereof; and

means including interengaging formations on said ends of said web and on said rim for releasably securing same together with said axes aligned and said one end of said rim bearing on said web at said ends thereof and for freeing said cap and said ring from each other when said cap is impacted.

4,206,920

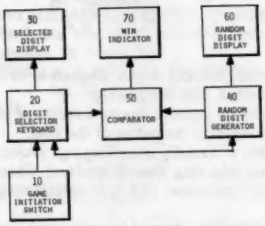
MULTIPLE DIGIT ELECTRONIC GAME

Fred Weatherford, 5317 Chesapeake Rd., Hyattsville, Md. 20781, and Karl D. Toll, 6315 Riverdale Rd., Riverdale, Md. 20840

Filed Nov. 4, 1977, Ser. No. 848,594

Int. Cl.[2] A63F *9/00*

U.S. Cl. 273—138 A **3 Claims**



2. A number comparison game, comprising:

a number selection means for generating an electronic representation of a selected number and including digit counters for said selected number;

random number generator means for generating an electronic representation of a random number and including random number digit counters;

a direct comparison flipflop responsive to said number selection means;

a partial comparison flipflop responsive to said number selection means;

a comparator flipflop responsive to said direct comparison and said partial comparison flipflops;

a comparator oscillator responsive to said comparator flipflop;

comparison selection means responsive to said comparator oscillator and said direct comparison and said partial comparison flipflops;

a first comparison counter responsive to said comparison selection means;

a second comparison counter responsive to said comparison selection means;

a plurality of AND gates responsive to said first comparison counter;

a plurality of AND gates responsive to said second comparison counter;

a plurality of groups of logic gates responsive to said selected digit counters and said AND gates responsive to said first comparator counter;

a second group of logic gates responsive to said random number digit counters and said AND gates responsive to said second comparator counter;

a pulse comparison means for comparing the outputs of said groups of logic gate means with the outputs of said second groups of logic gate means;

a plurality of compare logic gates responsive to said pulse comparison means, said comparator oscillator, and one of said AND gates responsive to said first comparison counter; and

a plurality of compare storage flipflops responsive to said compare logic gates.

4,206,921

ROULETTE-TYPE GAME APPARATUS

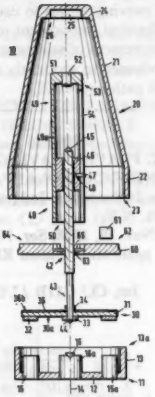
Wolfgang Luehr, Hauptstrasse 7, Borstel, Fed. Rep. of Germany (2351)

Filed Mar. 15, 1978, Ser. No. 886,900

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1977, 7708001[U]

Int. Cl.[2] A63F *5/04*

U.S. Cl. 273—142 D **15 Claims**



1. A roulette-type game apparatus comprising:

a base (**11**);

a signaling plate (**30**) rotatably mounted above said base, said plate bearing symbols (**36c**) on a surface thereof for determining the character of an entertainment game;

means (**60**) mounted on said base above said plate and having a plurality of compartments (**64**) for receiving indicator means (**61**), said compartments being adapted for association with said symbols on said plate;

enclosure means (**20**) joined to said base for retaining said indicator means in said game apparatus; and

drive means for producing relative rotation between said signaling plate and compartment means, said drive means comprising a drive spindle (**41**) mounted on said signaling plate, extending through said compartment means, and journalled in at least one of said base and enclosure means, said spindle having an upper threaded portion and a lower unthreaded portion, a non-rotating weight (**46**) engageable with said spindle for rotating same by movement along the threaded portion and for permitting said spindle and signaling plate to freely rotate when said weight has moved to the unthreaded portion.

4,206,922

JIG-SAW PUZZLE DISPLAY ASSEMBLY AND METHOD

Eunice R. Keane, 11 Maeven Ave., Kingston 10, Jamaica

Filed Dec. 29, 1978, Ser. No. 974,355

Int. Cl.[2] A63F *9/10*

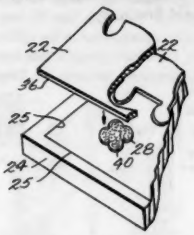
U.S. Cl. 273—157 R **12 Claims**

8. A jig-saw puzzle display assembly, comprising:

a substantially flat, rigid mounting member defining an upper surface and a lower surface and further defining a plurality of apertures;

a plurality of removable plug members normally positioned and held in frictional engagement within said apertures and each of said plug members defining an upper surface and a lower surface;

a multi-piece assembled jig-saw puzzle defining a front face and a rear face, said puzzle being positioned on said mounting member with the rear face of the puzzle contacting an upper surface of said mounting member; and



an adhesive located on and adhering to said upper surface of each of said plug members and adhering to the rear face of predetermined ones of said jig-saw pieces.

4,206,923

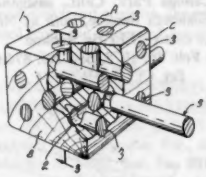
DICE BLOCK PUZZLE

Maurice Cloutier, 6616 Louis Hébert St., Montreal, Quebec H2G 2G7, Canada

Filed Aug. 31, 1978, Ser. No. 938,538

Int. Cl.[2] A63F *9/12*

U.S. Cl. 273—160 **3 Claims**



1. A block puzzle toy comprising a multi-faced body having at least three pairs of parallel equally spaced opposite faces, said body having as many sets of through bores as there are pairs of faces, with the through bores of each set opening at and being perpendicular to the associated pair of faces, at least some of the through-bores of one set partially intersecting through bores of another set, and a plurality of rods all of the same length equal to the distance between the faces of any pair of faces and removable from said multi-faced body, corresponding to the number of through-bores, for insertion into the latter such that the ends of said rods are flush with their corresponding faces when fully inserted and all said rods extend entirely through said multi-faced body when inserted, some of said rods being notched in at least one place along their length to accomodate said intersections wherein only one axial orientation of the notched rods is possible and whereby only one order of assembly is possible out of several possible combinations.

4,206,924

WEIGHTED GOLF CLUB HEAD

Larry Koralik, 453 Everett, Palatine, Ill. 60067

Filed Mar. 6, 1978, Ser. No. 883,818

Int. Cl.[2] A63B *53/04*

U.S. Cl. 273—169 **2 Claims**

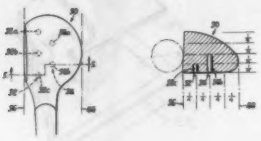
1. In an integral golf club head having a club face, the improvement comprising:

a plurality of small individual weights inside the club head arranged in first and second rows substantially parallel to and adjacent the club face and to each other;

said first row of weights including more than two weights

which are equally spaced and are distributed along a line substantially parallel to the club face;

said second row of weights comprising a plurality of weights arranged in a staggered relationship with respect to the weights in said first row;



one of the first and second rows of weights being disposed at a greater distance from the club head face than the other, the weights of said one row extending further into the club head measured from the sole of the club than the row of weights disposed most closely adjacent the club face.

4,206,925

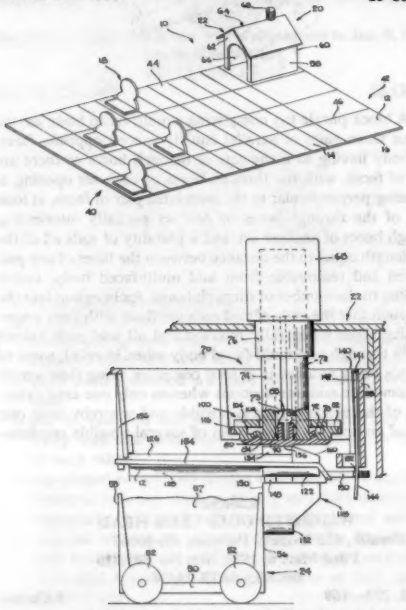
BOARD GAME WITH CHANCE OPERATION AND RANDOM STRIKER

Adolph E. Goldfarb, 4614 Monarca Dr., Tarzana, Calif. 91356; Erwin Benkoe, deceased, late of Encino, Calif. (by Elisabeth Benkoe, executrix); Delmar K. Everitt, Woodland Hills, Calif.; Ronald F. Chesley, La Crescenta, Calif., and Richard D. Frierdich, Canoga Park, Calif., assignors to Adolph E. Goldfarb and Elisabeth Benkoe, both of Northridge, Calif., executrix for the estate of Erwin Benkoe

Filed Feb. 10, 1978, Ser. No. 876,660

Int. Cl.[2] A63B *67/14*

U.S. Cl. 273—248 **13 Claims**



1. A surprise action play apparatus comprising:

(a) base means defining at least one generally linear pathway having a starting end and extending therefrom toward a finishing end;

(b) a play target member locatable on said pathway and movable along said pathway; chance means for controlling said movement of said target member;

(c) an initially stationary striker member adapted to move along said pathway and to strike said target member, said striker member being separate from and unconnected to said base means;

(d) moving means associated with said striker member for moving said striker member along said pathway; and

(e) manually movable control means mechanically interacting with said moving means to cause automatically, after random mechanical movement or apparently random mechanical movement of said control means, said moving means to be released to suddenly move said striker member along said pathway.

4,206,926

VIDEO DISC PLAYER HAVING RECORD SIZE IDENTIFICATION APPARATUS

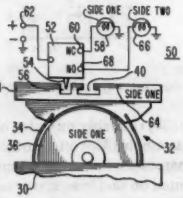
Frederick R. Stave, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,532

Claims priority, application United Kingdom, Feb. 13, 1978, 05732/78

Int. Cl.[2] G11B *17/04*

U.S. Cl. 274—9 B **9 Claims**



1. In a player for use with a disc record removably subject to occupancy of a protective cover comprising a jacket and a record retaining spine removably located within said jacket; said record being enclosed in said cover such that a first side of said record is associated with a given side of said spine; said player having an input slot through which an occupied cover is inserted to load an enclosed record therein; said player additionally including a record extracting mechanism for removing said retaining spine from said jacket during jacket withdrawal subsequent to an occupied cover arrival at a fully inserted position in said player, thereby retaining said spine and said associated record in said player; apparatus comprising:

(A) first means subject to conditioning in a first state in response to insertion of an occupied cover with said given side of said spine facing upward, and subject to conditioning in a second state in response to cover insertion with said given side facing downward in response to a discontinuity disposed in said cover; and

(B) second means responsive to the state of said first means for providing an indication of the record side subject to playback.

4,206,927

GASKET FOR VEHICLE LAMP

David C. Garascia, Novi, Mich., assignor to American Sunroof Corporation, Southgate, Mich.

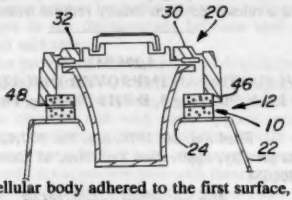
Filed Sep. 29, 1978, Ser. No. 947,009

Int. Cl.[2] F16J *15/06*

U.S. Cl. 277—12 **5 Claims**

1. In combination with an automotive vehicle lamp assembly of the type mounted in an exterior opening formed in the automotive body, a sealing gasket therefor, comprising:

(a) a solid central core having first and second exposed surfaces,



(b) a first cellular body adhered to the first surface, and

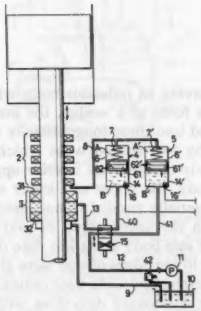
(c) a second cellular body adhered to the second surface.

4,206,928

SYSTEM FOR RECIRCULATING SEALING LIQUID IN A STIRLING ENGINE

Kenji Asano, Ageo, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Sep. 5, 1978, Ser. No. 939,619
Claims priority, application Japan, Sep. 10, 1977, 52-109086
Int. Cl.[2] F16J 15/40
U.S. Cl. 277—15 12 Claims



1. A system for recirculating sealing liquid escaping from a single liquid seal comprising:

first and second pumping means, said pumping means having respective lines to a chamber therein,

a reservoir of sealing liquid accumulated from leakage of said liquid seal, and

valve means for selectively coupling only one of said pumping means to said reservoir through one of said lines while simultaneously coupling only the other of said pumping means to said liquid seal through the other of said lines.

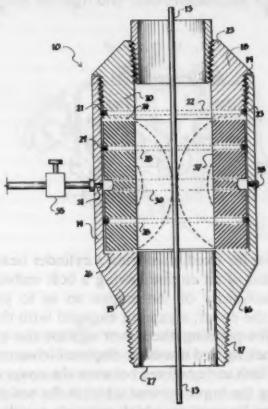
4,206,929

BLOW OUT PREVENTER

Albert I. Bruce, 1221-45th Ave. NE., Calgary, Alberta, Canada

Filed Mar. 7, 1978, Ser. No. 884,171
Int. Cl.[2] E21B 33/06
U.S. Cl. 277—34 2 Claims

1. A blow out preventer for use in oil and gas well pumping assemblies which includes a polish rod, upper and lower tubing sections within which said polish rod reciprocates and a source of hydraulic fluid under pressure; comprising in combination a casing engageable between said upper and lower tubing sections, a cap detachably securable upon one end of said casing, one of said tubing sections being operatively secured within said cap, a resilient cylindrical spool within said casing, said spool having end walls perpendicular to the longitudinal axis of said spool, means within said casing to position said spool, said means to position said spool within said casing including a spool engaging inner end on said cap and a spool engaging shoulder formed within said casing adjacent the end thereof opposite to said cap, an annular channel formed around the outside of said spool intermediate the ends thereof, means operatively connecting through said casing with said channel and being operatively connected to said source of hydraulic fluid under pressure whereby said spool is caused to collapse inwardly upon the associated polish rod by said hydraulic fluid, said inner end of said cap slopping outwardly and towards the outer end of said cap, said shoulder sloping outwards and towards said end of said casing opposite to said cap, said sloping inner end and sloping shoulder defining with the end walls of said spool, an annular wedge-shaped space when



said spool is in a non-collapsed position, thereby facilitating the return of said spool from the collapsed position.

4,206,930

CIRCUMFERENTIALLY COMPRESSED PISTON RING ASSEMBLY AND METHOD

Gordon E. Thrane, Akron, N.Y., and Brian L. DePerro, South Bend, Ind., assignors to Chemprene, Inc., Alden, N.Y.

Filed May 31, 1977, Ser. No. 801,638
Int. Cl.[2] F16J 9/00
U.S. Cl. 277—165 13 Claims

1. In a piston, cylinder and seal assembly combination, said piston being located within said cylinder for relative movement with respect thereto and including at least one seal-receiving groove formed therein, said seal assembly including an expander seal ring composed of a resilient material disposed within said groove and a split seal ring disposed within said groove radially outwardly with respect to said resilient expander seal ring and in circumferentially contacting overlying relation therewith, said cylinder having a given internal diameter, said split seal ring being formed of a compressible synthetic resin and including at least one pair of opposing, axially and radially extending surfaces at the split thereof, the improvement comprising said split seal ring having an oversized closed gap condition with respect to said given internal diameter of the cylinder such that said pair of opposing, axially and radially extending surfaces thereof are in circumferentially compressive, force-imparting direct contact with each other, whereby said split seal ring is in a circumferential compressive strain condition.

4,206,931

APPARATUS FOR FITTING A CYLINDER HEAD COVER

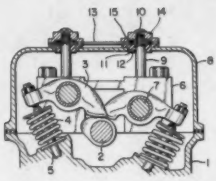
Tsutomu Tomita, Okazaki; Masahito Kato, and Toshiaki Doryo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 26, 1978, Ser. No. 928,166

Claims priority, application Japan, Aug. 4, 1977, 52-103784[U]

Int. Cl.[2] F16J *15/10*

U.S. Cl. 277—166 5 Claims



1. In an apparatus for fixedly securing a cylinder head cover to the cylinder head of an engine having a bolt embedded in and projecting outwardly of the engine so as to protrude through a hole in the cover, a cap nut engaged with the outer end of said bolt for pressing the cover against the cylinder head, and a seal packing and a washer disposed in surrounding relationship to the bolt and confined between the cover and the cap nut, comprising the improvement wherein the seal packing includes an annular lip portion which projects axially of the seal packing and passes through a hole in the washer, said cap nut having an annular recess formed in and opening axially outwardly from the lower end thereof, said annular recess being concentric with said bolt and surrounded by an annular flange which is integral with said cap nut, said lip portion projecting into said annular recess and being snugly sealingly engaged with the bottom wall thereof in surrounding relationship to said bolt, said washer being interposed between said seal packing and said cap nut so that the annular flange on said cap nut bears against one side of said washer.

4,206,932

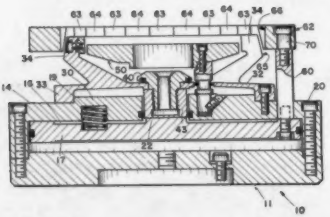
DIAPHRAGM CHUCK WITH LOCKING RING

Merle Felker, Traverse City, Mich., assignor to Sheffer Collet Company, Traverse City, Mich.

Filed Feb. 28, 1979, Ser. No. 16,012

Int. Cl.[2] B23B *31/32*

U.S. Cl. 279—1 D 14 Claims



1. A diaphragm type chuck having a chuck body, a normally substantially flat diaphragm secured at its periphery to said body; a plurality of spaced radially extending work gripping jaws arranged in a circle and mounted on one face of said diaphragm, a chuck actuator axially movable with respect to said chuck body having means thereon centrally engaging said diaphragm for deflecting said diaphragm to render said one face thereof convex, said chuck characterized in that clamping means is provided adjacent the radial outer end of each of said jaws; elements mounting said clamping means to said chuck actuator for movement therewith axially of said chuck body between a jaw clamping position radially aligned with said jaws and a release position axially remote from said jaws.

4,206,933

SLEIGH HAVING AN IMPROVED INFLATABLE BODY

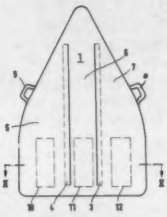
Herbert Koch, Pinswang 4, D-8211 Rimsting, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,426

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 7801034

Int. Cl.[2] B62B *15/00, 13/16*

U.S. Cl. 280—18 4 Claims



1. A sleigh having an inflatable body which is shaped substantially in the form of a wedge, the interior of said body being subdivided into three longitudinally extending adjacent compartments by two spaced webs which extend longitudinally of said body between the interior upper and lower surfaces of said body, the upper and lower edges of said webs extending substantially parallel to one another, the horizontal spacing between the upper edges of said two webs at said upper surface of said body being less than the horizontal spacing between the lower edges of said webs at said lower surface of said body whereby said webs slant outwardly relative to one another in their downward directions within said body, the upper surfaces of the outer ones of said compartments bulging upwardly to a greater extent than the upper surface of the center compartment when said body is inflated, the forward end of said body having a wedge-shape, the rear end of said body having substantially parallel outer edges, the spacing between the lower edges of said webs at the rear end of said body being substantially equal to the spacing between each of said webs and the adjacent outer edge of said body in the region of said body between said parallel outer edges, and guide means attached to the exterior of the lower surface of said body only in the region of said body between said parallel outer edges, said guide means comprising grooved members located below each of said three compartments respectively, the grooves in said members extending substantially parallel to one another in the longitudinal direction of said body.

4,206,934

CONTROL VALVE MECHANISM FOR AN AIR SPRING VEHICLE SUSPENSION

Laird W. McKee, La Jolla, Calif., assignor to Grumman Flexible Corporation, Delaware, Ohio

Filed Aug. 11, 1978, Ser. No. 932,957

Int. Cl.[2] B60G *17/04*

U.S. Cl. 280—711 9 Claims

1. Vehicle suspension system with a control valve mechanism for regulating the air pressure within a control valve mechanism for regulating the air pressure within a vehicle air spring that functions to increase the spring rate when the air spring is being compressed or expanded on curves and bumpy road surfaces comprising:

an axle,

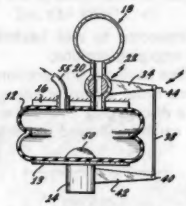
a vehicle chassis,

an air spring attached between said axle

and said chassis,

an air reservoir, means for providing said air spring with variable spring rates in immediate response to forces causing changes in the displacement between said vehicle chasses and said axle,

said means for providing said air spring with variable spring rates comprising a control valve having a housing with an air intake port and an air exhaust port, a first air line open only at its opposite end with these opposite ends connected respectively to said air reservoir and said air inlet port to form a completely closed air passage, a second air line open only at its opposite ends with these opposite ends connected respectively to said air exit port and said air spring to form a completely closed air passage, a plug member mounted in said valve housing, a bore hole passing through said plug member and being located in said plug member so that when the position or orientation of said plug member within said housing is moved or adjusted the opposite ends of said bore can be aligned with both said air intake port and said air exhaust port at the same time,



means for moving or adjusting said plug member within said housing to vary the amount that said air intake and air exhaust ports are blocked off by said plug member from a position of being fully closed off to a position of full alignment in immediate response to changes in the load of the vehicle chassis load of the vehicle chassis upon the air spring,

when said control valve ports have their maximum opening said air spring has its softest or minimum spring rate, any forces causing the vehicle chassis to move toward said axle cause the valve opening ports to grow smaller than the maximum open position and continued increasing force makes the spring rate harder and harder until the maximum spring rate is reached at the point when the valve ports are completely closed, also any forces causing the vehicle chassis to move away from said axle cause the valve opening ports to grow smaller than the maximum open position and continued increasing force makes the spring rate harder and harder until the maximum spring rate is reached at the point when the valve ports are completely closed.

4,206,935

MOTOR VEHICLE ROLL CONTROL SYSTEM

Thomas H. Sheppard, Hitchin, and Richard L. Paddison, Ampthill, both of England, assignors to General Motors Corporation, Detroit, Mich.

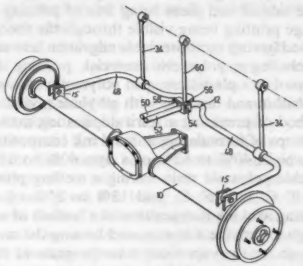
Filed Oct. 16, 1978, Ser. No. 951,391

Claims priority, application United Kingdom, Oct. 21, 1977, 43918/77

Int. Cl.[2] B60G *11/18*

U.S. Cl. 280—723 **1 Claim**

1. A motor vehicle roll control system in a motor vehicle having a suspension system including at least one anti-roll bar coupled between a sprung portion of the vehicle and an unsprung portion of the vehicle, said control system including an anti-roll force adjustment means on said anti-roll bar, which anti-roll force adjustment means comprises a modified hydraulic suspension strut coupling one end of the anti-roll bar to the vehicle, said suspension strut comprising a cylinder filled with hydraulic fluid, a piston reciprocably movable within said cylinder by means of a connecting rod extending through a seal in one end of the cylinder and attached to said piston, and a fluid connection between the ends of the cylinder to allow flow of hydraulic fluid from one end of the cylinder to the other end of the cylinder; and a control means comprising a valve in said fluid connection which controls the flow of hydraulic fluid through said fluid connection, which valve, when



closed, prevents effective movement of said piston within said cylinder, and thus allows said anti-roll bar to become effective in said suspension system to counteract roll being produced in said vehicle when in motion upon a road surface, and, when open, allows substantially unhindered motion of said piston within said cylinder, and thus prevents said anti-roll bar from becoming effective in said suspension system to counteract relative movement between said sprung portion and said unsprung portion of the vehicle when said vehicle is in motion over irregular terrain.

4,206,936

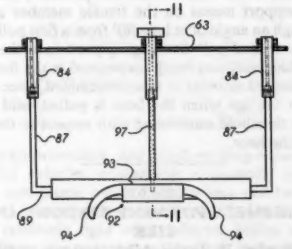
VEHICLE RESTRAINT SYSTEM FOR THE HANDICAPPED

Robert J. Appley, 902 Birch Ave., Shelby, Mont. 59474

Division of Ser. No. 794,822, May 9, 1977. This application Aug. 7, 1978, Ser. No. 931,615

Int. Cl.[2] B60R *27/00*

U.S. Cl. 280—751 **4 Claims**



1. A dash mounted driver restraint system for a vehicle including a padded horizontal lap-engaging portion, adjustable means joining said lap-engaging portion with said dash, an upstanding arm pivotally connected to said lap-engaging portion, a padded body-contacting portion on the free end of said arm, an inertia reel adjacent said dash, and flexible connecting means operatively connecting said free end of said arm with said inertia reel.

4,206,937

SPIRIT DUPLICATING MASTER AND METHOD OF MAKING THE SAME

Donald B. Huston, Menasha, Wis., assignor to George Banta Company, Inc., Menasha, Wis.

Filed May 15, 1978, Ser. No. 906,066
Int. Cl.[2] B41L *1/36*; B05D *5/06*; C09D *11/10*
U.S. Cl. 282—27.5 **14 Claims**

1. A preprinted spirit duplicating master, comprising a translucent paper sheet having an opacity less than 79%, and spirit duplicating ink printing in reverse image on one side thereof, the opposite side of said sheet being free of printing and said reverse image printing being visible through the sheet in positive image and having no appreciable migration into said sheet, said ink including a polymeric material, printing dyes and ethylene glycol as a plasticizer, said polymeric material being soluble in alcohol and miscible with ethylene glycol.

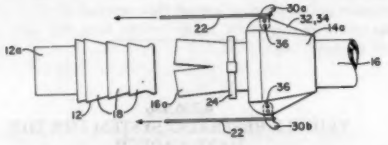
5. A method of preparing a spirit duplicating master, comprising the steps of formulating a liquid ink composition comprising by weight 40% to 62% of a dye, 40% to 65% of an alcohol soluble polyamid resin having a melting point in the range of 110° C. to 125° C., and 12% to 25% of ethylene glycol, printing said ink composition of a surface of a sheet in reverse image to provide a master, and heating the master to a temperature above the vaporization temperature of the ethylene glycol to reduce the ethylene glycol content in the dried ink to a value in the range of 3.0% to 6.25% by weight.

4,206,938

HOSE SHEAR COUPLING

Jeffrey M. Bartell, Rome, N.Y., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jul. 31, 1978, Ser. No. 929,378
Int. Cl.[2] F16L *35/04*
U.S. Cl. 285—2 **9 Claims**



1. In a hose coupler including a male member and a female member intercoupled to connect two sections of flexible hose, means on the female member for receiving pull means for pulling the hose in the direction of the coupling of the two members comprising at least two radially extending ears on opposite sides of the female member pivotably mounted to stationary support means on the female member such as to rotate through an angle of at least 90° from a first pull engaging position to a second pull disengaging position in the direction of the coupling, said ears being maintained in the first position by means adapted to shear at a predetermined force threshold imparted on the ear when the hose is pulled, said predetermined force threshold established with respect to the ultimate strength of the hose.

4,206,939

LATCH ASSEMBLY FOR VENT WINDOWS AND THE LIKE

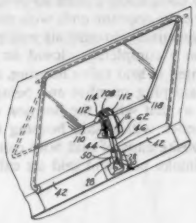
Stephen K. Rowley, II, Taylor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 13, 1978, Ser. No. 960,154
Int. Cl.[2] E05C *17/10*
U.S. Cl. 292—263 **6 Claims**

1. In a toggle catch for a pivotable vent window having: a base rigidly mountable to a molding; an intermediate link pivotably connected at one end thereof to the base; a handle section connected at one end thereof to an opposing end of said intermediate link; said handle section being pivotably connectable to said vent window such that said catch has an open and closed position with said handle section folded over said intermediate link and base in said closed position; the improvement comprising:

two latches;

pivot means for pivotably mounting said latches to the handle section for engagement with said base when the catch is in a closed position and preventing the catch from moving to an open position;



spring means connected to said latches for biasing said latches to the engaging position;

each of said latches having a grip portion;

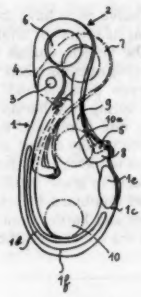
said grip portions being manually engageable for moving said latch to a disengaging position to release said base such that the catch is allowed to be moved to an open position.

4,206,940

HANDLING HOOK ASSEMBLY

Edmond Altabé, 167 Avenue Gambetta, Paris, France 75020

Filed May 23, 1978, Ser. No. 908,700
Claims priority, application France, Nov. 24, 1977, 77 35304
Int. Cl.[2] B66C *1/36*
U.S. Cl. 294—82 R **8 Claims**



1. A handle hook assembly for a hoisting apparatus that includes a lifting cable for hoisting a load-carrying sling or the like, said handling hook assembly comprising a hook member forming a loop having a long arm, a short arm with a curved hook portion therebetween, the free ends of said respective long and short arms being spaced from one another to define therebetween a gap for permitting the introduction into and removal from the hook member of the load-carrying sling or the like, said handling hook assembly further comprising a locking lever, pivot means for pivotally mounting said locking lever onto the long arm of said hook member and adjacent the free end thereof for movement between a locking position in which said locking lever bridges said gap and an open position wherein said gap is open and wherein said locking lever is disposed adjacent said long arm of said loop, said locking lever having an aperture for receiving the lifting cable, said aperture

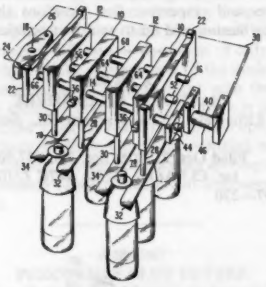
being located so that, when the assembly is suspended from the lifting cable above the pivot means with said curved hook member portion forming the lowermost part of the loop defined by the assembly, said pivot means is located above the lowermost zone of said loop, the direction of the lifting force from the lifting cable being offset from said pivot means and on one side thereof to impart thereto a moment in a direction to force the end portion of said lever into positive engagement with the free end of said short arm of said hook member to prevent inadvertent opening of said gap during hoisting, the free end of said locking lever having a claw-shaped end portion with two claws, said claws being provided with laterally extending engaging surfaces, said short arm of said hook member being provided at its free end with laterally extending shoulder portions for engagement, respectively, by said engaging surfaces of said claws when said locking lever is in said locking position.

4,206,941

UNIVERSAL BOTTLE SUSPENSION DEVICE

Anton J. Wild, 310 Springfield Ave., Westfield, N.J. 07091

Filed Nov. 1, 1978, Ser. No. 956,772
Int. Cl.[2] B66C *1/42*
U.S. Cl. 294—87.26 **11 Claims**



1. A Universal Bottle Suspension Device comprising:

(a) a plurality of movably mounted slide members arranged in pairs and disposed in spaced relation with respect to one another to be movable both toward and away from one another, each pair of said slide members comprising a first slide member and a second slide member, each slide member defining therein a central slide aperture, and two lateral slide apertures, a first lateral slide aperture and a second lateral slide aperture, each being located on each lateral side of said central slide aperture;

(b) a first connector means extending downwardly below each said first slide member and a second connector means extending downwardly below said second slide member, said first and second connector means being movable responsive to movement of said first and second slide members;

(c) a first rail member fixedly secured to said first connector means and extending longitudinally with respect to said first slide member, a second rail member fixedly secured to said second connector means and extending longitudinally with respect to second rail member, said first rail member and said second rail member being disposed in spaced relationship and parallel with respect to one another to define a retaining channel there between for holding and suspending bottles, said first and second rail member being movable both toward and away from one another responsive to similar movement of said first and second movably mounted slide members;

(d) a plurality of support members being fixedly secured to the surrounding environmental structure and positioned adjacent said slide members, each support member defining a central support aperture, and two lateral support apertures, a first lateral support aperture and a second lateral support aperture each being located on each lateral side of said central support aperture;

(e) a pivot shaft extending through said central support apertures and fixedly secured thereto, said pivot shaft also extending through said central slide apertures and movable with respect thereto;

(f) a first shaft means extending through said first lateral support apertures of said support members and being movable with respect thereto, said first shaft means also extending through said first lateral slide apertures of said slide members to be horizontally parallel with repect to said pivot shaft;

(g) a second shaft means extending through said second lateral support apertures of said support members and being movable with respect thereto, said second shaft means also extending through said second slide apertures of said slide members to be horizontally parallel with respect to said first shaft means and said pivot shaft means;

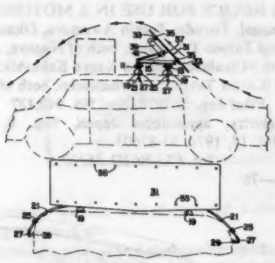
(h) a pivot link means being pivotally secured at opposite ends thereof to said first shaft means and second shaft means, said pivot link being pivotally secured at the central area thereof to the surrounding environmental structure such that axial movement of said first shaft means will cause pivoting of said pivot means and opposite axial movement of said second shaft means, each said first slide member being fixedly secured to said first shaft means at said first lateral slide aperture and each of said second slide members being fixedly secured to said second shaft means at said second lateral slide apertures such that pivotal movement of said pivot link and axial movement of said first and second shaft means causes closing and widening of the distance between each pair of said first and second rail members.

4,206,942

CARGO-PROTECTING DRAG-REDUCING ADJUSTABLE WIND-DEFLECTOR FOR VEHICLES

Alexander S. Nudo, both of 2508 S. Grand Ave. E., Springfield, Ill. 62707, and Thomas Nudo, both of Springfield, Ill.

Filed Feb. 21, 1978, Ser. No. 879,585
Int. Cl.[2] B62D *37/02*
U.S. Cl. 296—1 S **9 Claims**



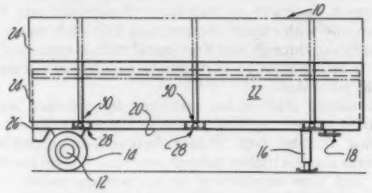
1. A cargo-protecting and air-flow-drag-reducing wind-deflector for vehicles, comprising: a generally horizontally disposable base frame, means for attaching said base frame at laterally and fore-aft spaced portions thereof to the roof of a vehicle, a relatively rigid wind-deflector lamina attached to said base frame for swinging adjustment about a transverse horizontally disposed axis located relatively close to said vehicle roof, and at least two arms pivotally connecting upper rear portions of said wind-deflector lamina to said base frame, each of said arms being medially divided and having overlapped mating faces with aligned bearing apertures formed therein, single axle means passing through all of said bearing apertures, and co-operating means for simultaneously clamping from one vehicle side said mating faces together in arm-length-adjusting selected angular position of the divided portions of said arms.

4,206,943

RETRACTABLE AND EXTENSIBLE TRAILER

Martin A. Friedenberg, 26273 Cornwall Ct., Southfield, Mich. 48076

Filed Jul. 28, 1977, Ser. No. 819,854
Int. Cl.[2] B62D *33/08*
U.S. Cl. 296—26 4 Claims



1. A trailer having at least one height variable sidewall, comprising:

(a) a frame

(b) at least one trailer sidewall defined by a lower wall member fixed to the frame and,

an upper wall member disposed adjacent the lower wall member, the two wall members cooperating to define the trailer sidewall,

(c) means for vertically adjusting the upper wall member comprising:

(1) a guide rail assembly supportingly mounted to said upper wall having a guide rail secured to the upper wall member and rod having a threaded portion fixedly mounted to the guide rail, and

(2) screw jack means for extending and retracting said rod, said screw jack means including a pad disposed laterally outwardly from the trailer frame, and secured thereto, said pad defining a support for said screw jack means, said screw jack means engaging said threaded portion of said rod to extend and retract said rod such that movement of the rod causes movement of the upper rail in response thereto such that the height of the sidewall is variable, and

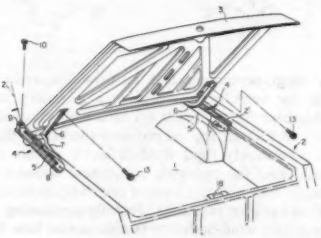
(3) means for powering the screw jack.

4,206,944

LID DEVICE FOR USE IN A MOTORCAR

Kiyoshi Kumagai, Toyoda; Toshio Awamura, Okazaki; Kiyoshi Aikawa, and Tatsuo Tatematsu, both of Nagoya, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tatematsu Seisakusho, both of, Japan

Filed Sep. 6, 1978, Ser. No. 940,137
Claims priority, application Japan, Sep. 8, 1977, 52-120009[U]; Jul. 17, 1978, 53-87603
Int. Cl.[2] B62D *25/10*
U.S. Cl. 296—76 12 Claims



1. In a combination including a motorcar body having therein an opening at least partially defined by at least one side edge portion extending in a longitudinal direction, a lid adapted to openably cover said opening, and at least one opening/closing device hingedly connecting said lid to said body for movement between a first position whereat said lid uncovers said opening and a second position whereat said lid covers said opening, the improvement wherein said opening/closing device comprises:

a base plate mounted on said side edge portion and extending in said longitudinal direction;

said base plate having formed therein an elongated guide slot extending substantially in said longitudinal direction;

a first arm member having a first end fixedly and non-pivotably secured to said lid and a second end mounted for sliding movement along said guide slot;

a second arm member having a first end pivotably connected to said first arm member at a position between first and second ends thereof and a second end pivotably mounted at a position adjacent said side edge portion;

said first and second arm members being movable between respective first positions thereof extending outwardly from said base plate when said lid is in said first position thereof, and respective second positions thereof extending substantially parallel to each other and to said guide slot when said lid is in said second position thereof; and

spring member means, having a first end acting on said base plate and a second end acting on one of said second end of said first arm member and said second end of said second arm member, for biasing said first and second arm members to said respective first positions thereof and for thereby biasing said lid to said first position thereof.

4,206,945

BACK AND HEAD SHEET

Harry P. Kifferstein, 27250 Harvard Rd., Southfield, Mich. 48076

Filed Oct. 2, 1978, Ser. No. 947,500
Int. Cl.[2] A61G *15/00*; A47C *1/10*
U.S. Cl. 297—220 14 Claims

1. A removable disposable head and back sheet for attaching to the top of a seat back and for draping over the front of said seat back, said head and back sheet comprising a sheet of soft pliable material, means at an edge of said sheet for attaching to said seat back top, and means at said edge of said sheet enabling a second sheet to be attached to said seat back top, wherein said seat back top is provided with a strip of Velcro material permanently attached thereto and said sheet is provided at said edge with a strip of complementary Velcro material, said means enabling a second sheet to be attached to said back seat top comprising a cut-out portion at said edge of said first sheet exposing portions of said strip attached to said seat back top.

4,206,946

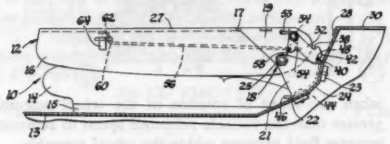
VEHICLE CONVERTIBLE SEAT AND LOCKING ARRANGEMENT

Donald E. Maertens, Washington, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 19, 1979, Ser. No. 21,559
Int. Cl.[2] A47C *1/00*; B60N *1/10*
U.S. Cl. 297—379 3 Claims

1. A convertible vehicle seat and locking arrangement comprising a seat bottom with a cushion, a seat back with a cushion, hinge means for supporting said seat back to swing be-

tween an upright position relative to said seat bottom and a horizontal position wherein the seat cushions contact and are compressed a predetermined amount, catch means on said seat back, stationary upright position latch means and horizontal position latch means separately engageable by said catch means to prevent said seat back from swinging toward and away from said seat bottom from the respective upright and horizontal positions, stationary guide means for guiding said catch means to engage the respective latch means as said seat back is moved between said positions, biasing means for holding said catch means in guided relationship with said guide means and for establishing said catch means in engagement with the respective latch means when said seat back is moved



into said positions, and release means for releasing said catch means from engagement with either said latch means whereby the seat back is releasably lockable against movement from its upright position toward the seat bottom by cooperation of the catch means, upright position latch means and biasing means with release thereof effected by operation of only the release means, and whereby the compression of the cushions acts on the catch means to hold its engagement with the horizontal position latch means to maintain the seat back in its horizontal position and locked against movement to said upright position with release thereof effected by slight swinging movement of the seat back toward the seat bottom with accompanying slight further compression of the cushions and then operation of the release means.

4,206,947

PERCUSSIVE SLOT CUTTER

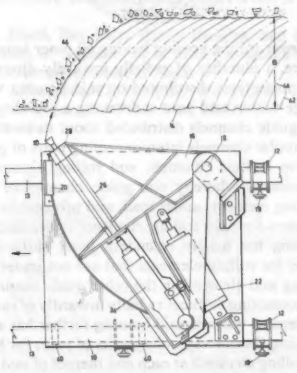
Henry Bingham, Springs, South Africa, assignor to Boart Hardmetals (Proprietary) Limited, Springs, South Africa

Continuation-in-part of Ser. No. 541,195, Jan. 15, 1975, abandoned. This application Nov. 20, 1978, Ser. No. 963,564

Claims priority, application South Africa, Jan. 18, 1974, 74/0384; Mar. 7, 1974, 74/1475

Int. Cl.[2] E21C *27/02*

U.S. Cl. 299—10 **1 Claim**



1. In a percussive hard rock drilling machine having an elongated drilling tool, an improved method of operating the machine for rock slotting by balancing the forces acting against the drilling tool to prolong the operating life thereof, comprising the steps of:

traversing the drilling tool in rock-cutting engagement with the hard rock to be cut, the drilling tool having an obtuse angle of attack in the range of 130° to 140° to the base of the slot being cut in the rock in the direction of the advance of the machine, the forces acting transverse to the longitudinal axis of the elongated drilling tool being thereby in substantial balance;

moving the drilling tool in an arc as the tool is in rock-cutting engagement with the hard rock; and

returning the drilling tool to its initial rock-cutting position without being in rock-cutting engagement with the hard rock.

4,206,948

PROCESS FOR SCRUB BRUSH MANUFACTURE

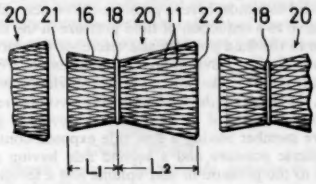
Shozaburo Shimizu, 1 2-chome, Kakomachi, Nakamura-ku, Naroya-shi Aichi-ken, Japan

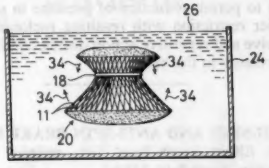
Division of Ser. No. 867,723, Jan. 9, 1978, abandoned. This application Jan. 23, 1979, Ser. No. 5,894

Claims priority, application Japan, Feb. 4, 1977, 52-11821

Int. Cl.[2] A46D *3/00, 9/00*

U.S. Cl. 300—21 **4 Claims**





1. A process, for the manufacture of a scrubbing brush, comprising the steps of:

(i) assembling a plurality of elongatable nettings each having a plurality of fibers connected to one another

(ii) forming said assembly of nettings into a bundle and securing it in that condition with a bundling member applied at a predetermined position thereon intermediate the ends of the bundle

(iii) cutting said bundle at two positions spaced respectively at each side of the position of application of the bundling member

(iv) heating said cut bundle to cause the fibers of the nettings to contract lengthwise of the bundle and to expand diametrically of the bundle so as to increase the diameter of the bundle as a whole other than at the position of application of the bundling member, and so as to cause the exposed ends of the cut bundle to assume a circular configuration.

4,206,949

CONTINUOUS QUICK SERVICE VALVES FOR BRAKING SYSTEMS

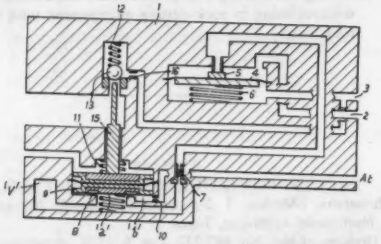
Clive A. Rathband; Jack Washbourn, and David J. Wickham, all of London, England, assignors to Westinghouse Brake & Signal Co. Ltd., Chippenham, England

Filed Dec. 4, 1978, Ser. No. 965,789

Claims priority, application United Kingdom, Dec. 15, 1977, 52239/77

Int. Cl.[2] B60T *15/42*

U.S. Cl. 303—38 5 Claims



1. Apparatus for improved quick service operation in a fluid pressure operable vehicle braking system which operates to make brake applications in response to reductions of fluid pressure in a brake pipe, the apparatus including a quick service valve having a brake pipe pressure input port and a port connected to atmosphere, a pressure difference sensing device responsive to a reduction of fluid pressure in the brake pipe in relation to the fluid pressure at a reference pressure input port to open a further valve to apply fluid pressure from a source distinct from the brake pipe via a first restriction to a pulsating device, the pulsating device comprising a volume receiving the fluid pressure applied to the pulsating device, a pressure responsive member having a first side exposed continuously to atmospheric pressure and a second side having a first area subject to the pressure in said volume and a second area connected via a further restriction to atmosphere, said member being displaceable in response to accumulated pressure in said volume applied to said first area to, on the one hand, open said quick service valve and, on the other hand, to inter-connect said areas to permit reduction of pressure in said volume via said further restriction with resulting reclosure of the quick service valve and repetitive action during continued reduction of fluid pressure in the brake pipe.

4,206,950

ANTI-SKID AND ANTI-SPIN BRAKE SYSTEM

Delbert R. Elliott, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Apr. 17, 1978, Ser. No. 897,240

Int. Cl.[2] B60T *8/02*

U.S. Cl. 303—110 4 Claims

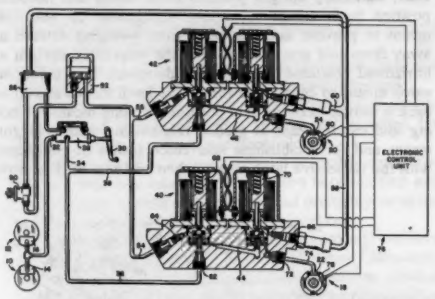
1. A brake system for a vehicle having at least one wheel assembly comprising:

a fluid pressure generating means normally communicating with the wheel assembly during braking;

a modulator valve normally communicating said fluid pressure generating means with the wheel assembly during braking;

a fluid pressure storage member communicating with said modulator valve; and

a control unit sensing the speed of rotation of the wheel assembly and comparing the same with a variable reference speed, said control unit cooperating with said modulator valve to close communication between said fluid pressure generating means and the wheel assembly when the speed of rotation of the wheel assembly is less than the variable reference speed to substantially reduce fluid pressure within the wheel assembly and cooperating with the modulator valve to open communication between said fluid pressure storage member and the wheel assembly



when the speed of rotation of the wheel assembly is greater than the variable reference speed to substantially increase fluid pressure within the wheel assembly.

4,206,951

LINEAR ROLLING BEARING

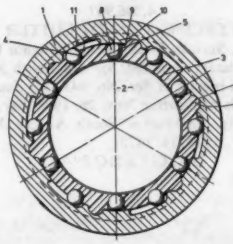
Horst M. Ernst, Eltingshausen; Armin Olschewski; Lothar Walter, both of Schweinfurt, and Manfred Brandenstein, Aschfeld, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Continuation of Ser. No. 783,066, Mar. 30, 1977, abandoned. This application Feb. 6, 1979, Ser. No. 9,956

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2614158

Int. Cl.[2] F16C *31/00*

U.S. Cl. 308—6 C 6 Claims



1. In a linear rolling bearing having an outer housing with a central bore, a plurality of radially inwardly directed axially extending projections distributed on said housing within said bore, a cage within said bore and having a plurality of axially extending guide channels distributed about its circumference, and semicircular channels interconnecting pairs of guide channels to form endless channels, and rolling elements in said endless channels, whereby one guide channel of each pair directs rolling elements under load, said projections form load carrying races for said rolling elements under load and said outer housing has axially extending inner surfaces forming return races for rolling elements that are not under load, said cage holding said elements in the other guide channel of each pair from contacting surfaces radially inwardly of said bearing; the improvement wherein said housing further has an inclined surface joining the corresponding pairs of races for loaded and unloaded rolling elements at each end thereof of said bearing in the region of said semicircular channels, said inclined surfaces extending steplessly radially outwardly from the respective load carrying and return channels and being comprised of annular grooves at each end of said outer housing in the bore

thereof and having inclined side surfaces which extend radially outwardly in the direction toward the axial ends of said bearing, the axial inward ends of said inclined surfaces intersecting said return races at each end thereof axially outwardly of the transverse plane at the respective ends of said semicircular channels, with respect to the lengthwise direction of said bearing, the inner diameter of said outer housing at the bottom of said grooves being greater than the inner diameter of said outer housing at said return races.

4,206,952

ROTARY DRILL BIT WITH A POROUS CUP BEARING

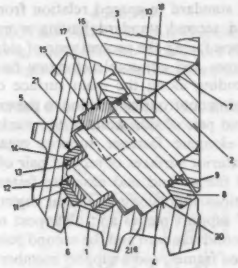
Armin Olschewski; Heinrich Kunkel, both of Schweinfurt; Manfred Brandenstein, Aschfeld, and Lothar Walter, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Dec. 13, 1978, Ser. No. 969,092

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1977, 2756964

Int. Cl.² F16C *17/02*

U.S. Cl. 308—8.2 **5 Claims**



1. A rotary drill bit comprising at least one trunnion and a cutter rotatably supported on said cutter by bearing means including at least one friction bearing, said friction bearing comprising a cup-like member filled with a lubricant, said cup-like member opening radially inwardly and circumscribing at least part of the trunnion and means mounting the cup in a manner to retain said cutter against axial displacement from said trunnion, said cup engaging in the bore of said cutter.

4,206,953

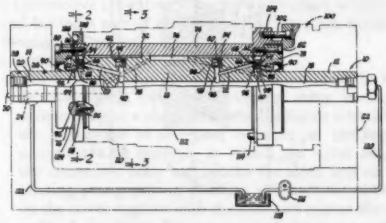
HYDROSTATIC BEARING SUPPORT FOR A WORK TOOL

Rodney A. Diehl, Bay City; Henry Douglas, and Robert W. Watson, both of Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 12, 1979, Ser. No. 11,397

Int. Cl.² F16C *7/04, 32/06*

U.S. Cl. 308—9 **2 Claims**



1. A support spindle for a rotary tool comprising: a stationary shaft having an enlarged central cylindrical portion, cylindrical suppport means adjacent each end of said enlarged cylindrical portion and cooperating with said central cylindrical portion to form an annular end surface on each end of said central cylindrical portion, a pair of spaced recesses formed in the outer surface of said central cylindrical portion, a return recess formed in said central cylindrical portion intermediate the spaced recesses; inlet liquid passage means concentric with and extending coaxially through one of said cylindrical support means and also being coaxial with and extending into said central cylindrical portion a distance beyond said return recess; feed passage means for communicating liquid from said inlet passage means to both of said spaced recesses and to both of said annular end surfaces of said central cylindrical portion; outlet luquid passage means concentric with and extending coaxially through the other of said cylindrical support means and also being coaxial with and extending into said central cylindrical portion a distance less than said inlet passage means extends into said central cylindrical portion; return passage means for providing liquid communication between said annular end surfaces, said return recess and said outlet liquid passage means; a cylindrical sleeve rotatably mounted on said central cylindrical portion and cooperating with said spaced recesses to provide a pair of radial support hydrostatic bearings; a pair of end cap means secured to said cylindrical sleeve and enclosing said annular end surfaces and cooperating therewith to provide a thrust chamber at each end of said central cylindrical portion; annular thrust bearing means in each of said thrust chambers in liquid communication with said feed passage means and providing controlled liquid communication with said return passage means and cooperating with said end cap means to provide a pair of hydrostatic thrust bearings; a work tool secured to said cylindrical sleeve intermediate said end cap means for rotation with said cylindrical sleeve and said end cap means; means supplying pressurized liquid to said inlet passage means; and means for rotating said cylindrical sleeve relative to said stationary shaft.

4,206,954

GUIDE BUSH

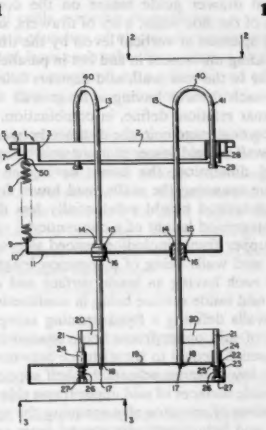
Pieter L. Koolman, Ambach, Netherlands, assignor to Avedko B.V., Drodrecht, Netherlands

Filed Jul. 17, 1978, Ser. No. 925,556

Claims priority, application Netherlands, Jul. 20, 1977, 7708061

Int. Cl.² A47F *1/06*

U.S. Cl. 312—71 **15 Claims**



1. A device for dispensing articles from a stack while maintaining the uppermost article of the stack at a predetermined dispensing level independent of the number of articles in the stack, said device comprising: an upper annular member

through which the articles are dispensed; a bottom member vertically spaced beneath said annular member along a central axis of the dispensing device; a plurality of circumferentially spaced, parallel posts extending between said annular member and said bottom, said posts being movable toward and away from said central axis in accordance with the size of the dispensed articles; an article carrier supported in said device for vertical travel, said article carrier having guide bushes embracing said posts and slidable therealong for permitting vertical travel of said carrier and for guiding same during such travel, said guide bushes being slidably movable with respect to said carrier toward and away from said central axis to accommodate movement of said posts with respect to said central axis.

4,206,955

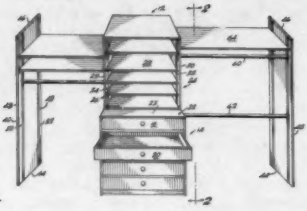
CLOSET STORAGE UNIT

Jack M. Cooper, 2471 SW. 122 Court, Miami, Fla. 33175

Filed Aug. 1, 1978, Ser. No. 929,928

Int. Cl.[2] A47B *87/00*

U.S. Cl. 312—107 **1 Claim**



1. For assembly within a closet, a storage unit and organizer of an overall predetermined height greater than the height of a conventional closet door, and of an overall width greater than the lateral opening of a conventional closet door, comprising: in combination with a conventional closet,

(A) a lower frame comprising rear wall and spaced vertical side walls, said walls being of a common height, each side wall having an inside face and an exterior face and said inside faces being in confronting relation to one another, the distance between the side walls being less than the lateral opening of a conventional closet door; vertically spaced drawer guide means on the confronting inside faces of the side walls, a set of drawers, said guide means being spanned at vertical levels by the drawers of the set for sliding movement in and out in parallel planes perpendicular to the rear wall, said drawers being of a common size, each drawer having a front wall which, when in coplanar relation, define, in combination, a front wall of the lower storage unit, the distance between the front and rear wall of said lower storage unit being of a predetermined dimension; the frame having an upper support surface spanning the walls, said lower frame being of a predetermined height substantially less than the overall predetermined height of a conventional closet door;

(B) an upper frame including spaced side walls and a rear wall, said walls being of a common length and said side walls each having an inside surface and an exterior surface, said inside surface being in confronting relation, said side walls defining a front opening receptacle, said side walls of said upper frame being spaced apart a distance substantially equal to the distance between the side walls of the lower frame, adjustable shelf support means along the inside surfaces of said upper frame side walls, and a set of shelves of common size spanning the upper frame side walls and being vertically spaced from one another and supported on said adjustable support means;

(C) said upper frame being sized to mate in stacked relation on the upper support surface of the lower storage frame with the rear wall of said frames being in a common plane, the height of the upper frame being substantially less than the vertical height of a conventional closet door, the combined height of the stacked frames being equal to or less than the height of the closet, each of said shelves having a front edge and rear edge;

(D) means to secure the frames in stacke relation with said rear walls of said frames in a common plane and a first and second pair of side walls in spaced common planes respectively;

(E) a standard spaced from said stacked upper and lower frames, said standard having a main generally planer surface facing the first pair of side walls of said stacked frames;

(F) adjustable elongate fastener support means extending along the main planar surface of said standard and in confronting relation to the first pair of side walls of the stacked frames, and adjustable elongate fastener support means extending along the exterior faces of the first pair side walls of the stacked frames confronting the standard, and said adjustable fastener means including stations therealong in lateral registry defining a plurality of support planes;

(G) a shelf and a rod spanning said standard and said stacked storage frames supported by said adjustable support means;

(H) a second standard in spaced relation from the stacked frames, said second standard having a main generally planar surface facing the second pair of side walls of the stacked frames and adjustable elongate fastener support means extending along the main surface of the second standard and in confronting relation to the exterior surface of the second pair of side walls of the stacked frame and adjustably elongate fastener support means extending along the exterior surfaces of second pair of side walls of the stacked frames and said elongate fastener means including stations therealong in lateral registry defining a plurality of support planes and a support member spanning said second standard and the second pair of side walls of the stacked frames, and a support member spanning the second standard and the stacked frames on said adjustable support means being adjustable vertically; and,

(I) the upper support surface spanning the walls including a front margin comprising an article support surface, said article support surface having an outer edge, said outer edge being spaced from the rear wall of the lower frame a distance greater than the distance between the front edge of the shelves and the rear wall of said upper frame.

4,206,956

KNOCK-DOWN CUPBOARD ASSEMBLY

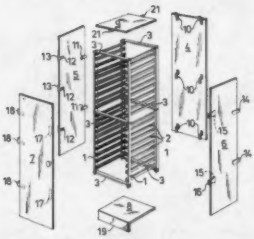
Arne Lydmar, Bromma, Sweden, assignor to Ingenjorsfirma Eifa AB, Vallingby, Sweden

Filed Oct. 6, 1978, Ser. No. 949,023

Claims priority, application Sweden, Oct. 12, 1977, 7711454

Int. Cl.[2] A47B *43/00*

U.S. Cl. 312—257 SK **2 Claims**



1. A cupboard having a rear wall, side walls and a door, said door being removably mounted on a frame, said frame is four-sided in plan, having two opposing sides each being formed by

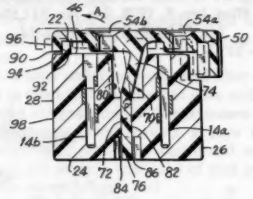
two vertical corner posts having spaced horizontal glide rails fastened thereto and two opposing sides of said frame being formed by at least lower and upper horizontal cross struts removably fitted between corner posts of said two opposing sides, wherein: a rear wall of said cupboard is provided on its inside surface with retaining brackets for engagement with the lower and upper struts at one side of the frame, and a pair of walls on their inside are each provided adjacent one vertical edge, with means for engagement with an inside of a respective corner post adjacent said rear wall, one of said pair of side wall being provided with a number of retaining brackets proximate to its edge opposite said one edge each carrying a hinge part and engaging against an inside of a third corner post, and the other of said pair of side walls being provided with at least one retaining fitting proximate to its edge opposite said one edge for engaging an inside of the remaining corner post, each retaining fitting having a magnetic means for maintaining the door in its closed position, the door is provided with hinge parts for coaction with the hinge parts on said one side wall and with pad means of magnetizable material, arranged to cooperate with said means on the other side wall to maintain the door releasably in its closed position.

4,206,957

PROTECTED ELECTRICAL CONNECTOR

Melvin S. Ludwig, and Hakki M. Tansi, both of Queens, N.Y., assignors to Eagle Electric Mfg. Co., Inc., Long Island City, N.Y.

Filed Feb. 1, 1979, Ser. No. 8,609
Int. Cl.[2] H01R *13/44*
U.S. Cl. 339—40 **20 Claims**



1. In an improved electrical outlet connector for connection with at least two electrical conductors, said outlet connector being of the type including

(A) a connector body having electrically-insulating wall portions defining a wall surface, and bounding at least one pair of open-ended slots spaced apart of each other, each slot being elongated in direction generally normally of the wall surface for receiving the prongs of an electrical plug, said wall portions also bounding a mounting hole,

(B) at least one pair of electrical contacts in electrical connection with the two electrical conductors, each contact being located in a respective slot and being slidably engageable with a respective prong when the latter is inserted into the respective slot, and

(C) a protective cover overlying the wall surface of the body and having a pair of prong-receiving openings extending through the cover,

the improvement which comprises:

(i) anti-friction means for mounting the cover on the body for non-sliding, swinging movement along an arcuate path and about a swing axis which extends normally of the elongation of the slots between an end-limiting prong-blocking position, in which the cover engages the connector body and blocks the slots, and an end-limiting prong-passing position, in which the openings on the cover register with the slots and expose the open ends of the latter for insertion of the prongs therethrough,

said anti-friction means constituting a resilient spring in force-transmitting engagement with the cover and operative for swinging the cover out of frictional engagement with the connector body during the swinging movement,

said spring being dimensioned to maintain the cover out of frictional engagement with the connector body during the swinging movement along the arcuate path between said positions, whereby frictional drag during the swinging movement is eliminated to thereby facilitate manual displacement of the cover,

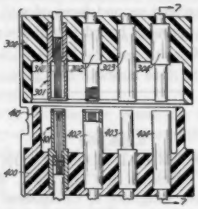
said spring having an anchored portion secured on the connector body, and a cantilever portion movable relative to said anchored portion, said anchored portion having a mounting section which is received in said mounting hole and which has a cross-sectional dimension of predetermined size, and an enlarged section which has a cross-sectional dimension of size greater than said predetermined size so as to define a shoulder with said mounting section, said shoulder being in engagement with the connector body to thereby prevent removal of the spring from the connector body.

4,206,958

ELECTRICAL CONDUCTOR HAVING AN INTEGRAL ELECTRICAL CONTACT

James R. Hall, Bainbridge, and William P. Whallon, Jr., Unadilla, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 27, 1978, Ser. No. 890,339
Int. Cl.[2] H01R *13/28, 23/18*
U.S. Cl. 339—49 R **3 Claims**



1. An electrical cable assembly comprising:

a cable having a plurality of electrical conductors, electrically insulated from each other by a magnet wire varnish, each conductor comprised of a plurality of conducting wire strands serving as a conductor termination for mating; and

a sleeve mounted on each conductor for securing each plurality of strands together, said sleeve spaced from one end of said conductor, said wire strands extending through said one end of said sleeve, with said strands being axially aligned with each other in a forward region thereof and the forward end of each such strand having an acutely angled end surface, with said wire strands exposed for mating with another conductor.

4,206,959

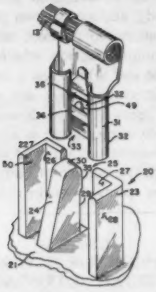
TERMINAL BOARD WITH INTEGRAL INSULATED POCKET

Wayne J. DeVries, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Mar. 27, 1978, Ser. No. 890,199
Int. Cl.[2] H01R *11/02*
U.S. Cl. 339—59 R **7 Claims**

1. In a terminal board for connecting a source of power to a dynamoelectric machine, said dynamoelectric machine including at least a first main winding, a second main winding, and an auxiliary winding, said terminal board including first and sec-

ond faces having a material thickness therebetween, means for connecting said power source to said windings, and a plurality of electrical conductors for operatively connecting said winding to said teminal board, at least one of said conductors being terminated in an electrical quick connect connector, the improvement comprising an insulating pocket of nonconductive material integrally formed with said terminal board, said pocket being defined by a first wall structure, a second wall



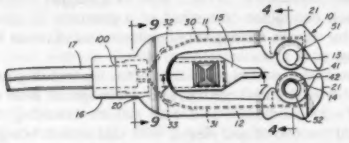
structure spaced from said first wall structure, and means for releasably locking said quick connect connector in said pocket, said locking means being spaced from said first and said second wall structures so as to have a gap therebetween, said first, second, and releasably locking means extending outwardly from one of said first and second faces of said terminal board, said last mentioned terminal board face defining a closed bottom for said pocket.

4,206,960

ELECTRICAL CONNECTOR

James M. Tantillo, Brockton, and Edward L. Boulanger, Hanson, both of Mass., assignors to Component Manufacturing Service, Inc., West Bridgewater, Mass.

Filed Apr. 5, 1978, Ser. No. 893,291
Int. Cl.[2] H01R *11/22;* A61N *3/06*
U.S. Cl. 339—61 R **18 Claims**



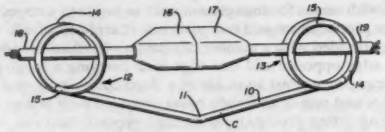
1. An electrical connector for engaging a terminal stud,
said connector comprising, first and second opposed insulating spring arms each carrying a conductive metal contact each attached to an associated electrically isolated conductor of a line,
each metal contact defining a through hole for electrically contacting a shank of an electrical terminal stud to electrically interconnect said electrically isolated conductors together,
said metal contacts normally lying in opposed spaced relationship to each other and located to have said hole of each contact be superimposed on each other when said spring arms are squeezed together at positions adjacent said contacts, by pressure so that release of pressure causes resiliently biased gripping of a shank of a terminal stud inserted into said holes.

4,206,961

EXTENSION CORD CLIP

William A. Cifalde, 1715 Warner Rd. SE., Hubbard, Ohio 44425

Filed Jun. 7, 1979, Ser. No. 46,301
Int. Cl.[2] H01R *13/54*
U.S. Cl. 339—75 P **5 Claims**



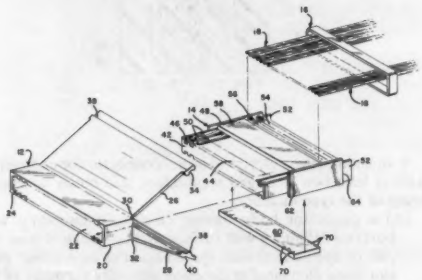
1. An extension cord clip for holding the connection ends of extension cords and the like in connected relation comprising a rod having coiled ends formed thereon in offset relation to the center portion of the rod, said coiled ends formed of closely spaced convolutions the diameters of which are in a common plane substantialy parallel to the extension cords when assembled and arranged to receive said cord between said convolutions in clamping relation and spaced with respect to one another a distance greater than the combined length of the connection ends of the extension cords.

4,206,962

DATA/LOGIC CONNECTOR

John I. Shue, Jr., York, and George H. Douty, Mifflintown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jun. 5, 1978, Ser. No. 912,596
Int. Cl.[2] H01R *19/46, 19/54*
U.S. Cl. 339—147 R **9 Claims**



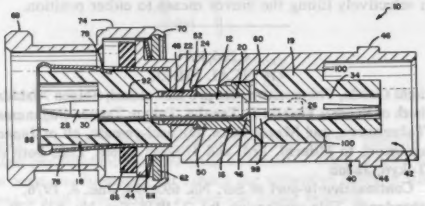
1. A data/logic connector comprising:
a housing member comprising an outer housing shell defining a through cavity and a pair of cover members integrally attached to and extending in one direction from said shell,
an inner housing member receivable within said cavity to be enclosed by said pair of cover members and having a first plurality of terminal receiving channels extending in a first direction from a central portion and a like second plurality of terminal receiving channels extending from said central portion in an opposite direction, and
means to secure each said cover members around said inner housing member;
a plurality of first terminals each received in a respective first channel extending in said first direction;
a like plurality of second terminals each received in a respective second channel extending in said opposite direction; and
electrical component means positioned within said cavity interconnecting said first and second terminals, said electrical component means being capable of modifying electrical signals passed through said connector.

4,206,963

CONNECTOR FILTERED ADAPTER ASSEMBLY

Keith H. English, Middle Paxton Township, Dauphin County; Edgar W. Forney, Jr., Harrisburg, and Michael F. O'Keefe, Mechanicsburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 20, 1979, Ser. No. 31,901
Int. Cl.[2] H01R *13/66*
U.S. Cl. 339—147 R 10 Claims



1. A filtered connector assembly for electrically connecting first inward and outward contact means to second inward and outward contact means respectively, and filtering selective elements of the signal transmitted between the resultingly connected first and second inward contact means, said assembly comprising:

an inner sub-assembly comprising:

a pin having a forward mating portion for engaging the first inward contact means, an intermediate portion, and a rearward mating portion for engaging the second inward contact means;

a filter sleeve having a bore therethrough receiving said pin intermediate portion in electrical engagement therewith; and

a conductive filter collar receiving said filter sleeve therethrough in electrical engagement with said filter sleeve and having external annular flange means;

a conductive retaining ring having a bore therethrough slightly larger than said filter sleeve and receiving said intermediate pin portion rearward of said annular collar flange means therethrough; and

a tubular conductive shell having generally forward profiled means for engaging the first outward contact means and rearward profiled means for engaging the second outward contact means, and having a bore therethrough of stepped profile along the length thereof comprising a first portion of small diameter receiving a forward end of said filter collar therein, and a second portion of a larger diameter joined to said first portion by a first annular step with said annular flange means of said filter collar abutting said first annular step, and said retaining ring securely positioned in said second portion of said bore with a forward end of said retaining ring engaging said annular flange means of said collar, and with outer surfaces of said retaining ring engaging inner walls of said shell to electrically common said shell and said filter sleeve.

4,206,964

TERMINAL DEVICE HAVING IMPROVED RETENTION MEANS

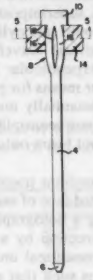
Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 28, 1976, Ser. No. 691,167
Int. Cl.[2] H01R *9/16;* H05K *1/18;* B21D *53/00*
U.S. Cl. 339—221 M 9 Claims

1. An electrical terminal device which is intended for use on a panel-like member such as a printed circuit board, said device having a retaining portion which is intended to be received in a hole in said panel-like member to retain said terminal device on said panel-like member:

said retaining portion comprising a pair of opposed substantially co-planar spring members, said spring members being outwardly formed and having generally concave internal sides which oppose, and are in substantial alignment with, each other, said spring members having oppositely directed generally convex external sides, said spring members being integral with each other at their ends, the opening between said spring members being in the form of a double segment, said spring members being flexible towards each other upon movement of said retaining portion into a hole having a diameter which is less than the maximum transverse dimension of said spring members,

said retaining portion having been produced by first shearing a blank between the sides thereof without removal of material and displacing portions of material on each side



of the shear line in opposite directions parallel to the plane of shearing and away from each other, and then displacing said portions of material in opposite directions normally of the plane of shearing and away from each other, and finally, displacing said portions of material parallel to the plane of shearing and towards each other until said portions of material

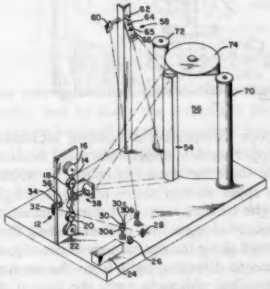
are substantially within the plane of the original blank whereby, upon insertion of said terminal device into a hole in a panel-like member, said spring members are flexed towards each other and said outwardly facing convex surfaces bear against the wall of said hole and retain said terminal device in said hole.

4,206,965

SYSTEM FOR SYNTHESIZING STRIP-MULTIPLEXED HOLOGRAMS

Stephen P. McGrew, 4624 W. 34th, Spokane, Wash. 99204

Filed Aug. 23, 1976, Ser. No. 716,463
Int. Cl.[2] G02B *27/00*
U.S. Cl. 350—3.76 58 Claims



1. A system for synthesizing strip-multiplexed transmission holograms, comprising:

image projection means for sequentially generating a plurality of two-dimensional images of coherent, substantially non-diffuse light;

anamorphic projection means for compressing said images in a first direction and expanding said images in a second direction to form an elongated object beam, said second direction being orthogonal to said first direction, said anamorphic projection means being positioned directly beyond said image projection means before said object beam has significantly diverged;

lens-beamsplitter means spaced apart from said anamorphic projection means, said lens-beamsplitter means being relatively narrow in said first direction and relatively long in said second direction, said lens-beamsplitter transforming said image beam incident on a first face into a substantially cylindrical wavefront, superimposing a second beam incident on a second face onto said cylindrical wavefront, and projecting said cylindrical wavefront and said second beam in a direction perpendicular to a third face;

reference beam generator means for projecting an elongated beam of coherent, substantially nondiffuse light onto the second face of said lens-beamsplitter means during the projection of said object beam onto said lens-beamsplitter means; and

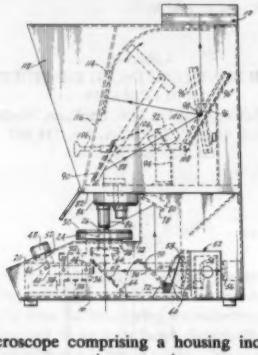
holographic recording medium transport means positioned directly beyond the third face of said lens-beamsplitter for sequentially advancing a holographic recording medium in a predetermined direction by a predetermined increment for each two-dimensional image generated by said image projection means such that at least one strip hologram is recorded on said recording medium for each of said two-dimensional images to form a strip-multiplexed hologram.

4,206,966

PROJECTION MICROSCOPE WITH FILM HOLDER

Donald R. Tyson, North Hollywood, and Robert W. Yates, Woodland Hills, both of Calif., assignors to Redken Laboratories, Inc., Canoga Park, Calif.

Filed Oct. 23, 1978, Ser. No. 953,478
Int. Cl.[2] G02B *21/36, 21/12;* G03B *17/54, 21/08*
U.S. Cl. 350—19 **5 Claims**



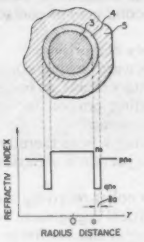
1. A microscope comprising a housing including a base section and an upper section, a specimen stage mounted on the base section, the stage having an opening, an objective lens mounted on the upper section above the stage, a light source mounted inside the base section, first mirror means directing light from the source along a first path extending through the opening in the stage along the optical axis of the objective lens, second mirror means directing light from the source along a second path extending obliquely onto the top of the stage, movable mirror means for selectively directing the light from said source along either said first path or said second path, a viewing screen mounted on the front of the upper section of the housing, a projection lens mounted on the upper section, optical means directing light from the objective lens through the projection lens, a film holder mounted on top of the upper section of the housing, and tiltable mirror means hingedly supported in the upper section of the housing along the optical axis of the projection lens, the tiltable mirror means in a first position reflecting light from the projection lens along a first path toward the viewing screen, the tiltable mirror means in a second position reflecting light along a second path toward the film holder, and control means extending outside the housing for selectively tilting the mirror means to either position.

4,206,967

OPTICAL FIBER

Seiichi Onoda, Tokorozawa; Shojiro Kawakami; Shigeo Nishida, both of Sendai; Toshiki P. Tanaka, Tokyo; Tsuneo Suganuma, Tokorozawa, and Masao Sumi, Higashi-yamato, all of Japan, assignors to Hitachi, Ltd. and Hitachi Cable, Ltd., both of Tokyo, Japan

Continuation-in-part of Ser. No. 692,994, Jun. 4, 1976, abandoned. This application Jul. 3, 1978, Ser. No. 921,220
Claims priority, application Japan, Jun. 6, 1975, 50-67642
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.33 **6 Claims**



1. In a three-layered optical fiber comprising

a first transparent dielectric center layer having a relatively high refractive index n_o and radius a,

a second transparent dielectric intermediate layer having a relatively low refractive index qn_o and thickness δa, and

a third transparent dielectric cladding layer having an intermediate refractive index pn_o,

the improvement wherein said relatively high refractive index n_o, said relatively low refractive index pn_o and said intermediate refractive index qn_o are selected so as to satisfy the following relation

$$\frac{2.75\,C}{\eta_o(1-q^2)(1-\frac{2}{v})\{\frac{1-p^2}{1-q^2}-\frac{U_{11}^2}{v^2}\exp(-\frac{2}{v})\}} \geqq Bz$$

where B is the bandwidth of signal to be transmitted, z is the length of the optical fiber, C is the velocity of light in vacuum, v is the normalized frequency, and $U_{11}=2.405$.

4,206,968

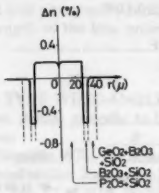
OPTICAL FIBER AND METHOD FOR PRODUCING THE SAME

Tsuneo Suganuma, Tokorozawa; Gyozo Toda, Hino; Koji Ishida, Tokyo; Shin Satoh, Iruma; Toshio Katsuyama, Kokubunji, and Mamoru Sugie, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 2, 1978, Ser. No. 874,420
Claims priority, application Japan, Feb. 2, 1977, 52-9665
Int. Cl.[2] G02B *5/14*
U.S. Cl. 350—96.33 **12 Claims**

1. An optical fiber comprising a barrier layer between an

outside glass layer and a core having a refractive index or an index profile as predetermined, said barrier layer exhibiting a refractive index substantially equal to that of said outside glass



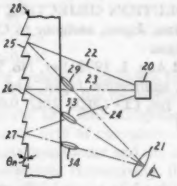
layer and being made of high-silica glass which contains at least one substance for lowering a refractive index of silica and at least one substance for raising the refractive index of silica and which is formed by a chemical vapor reaction.

4,206,969

DIRECTIONAL FRONT PROJECTION SCREEN

Sanford Cobb, Lakeland; Terrence M. Conder, Stillwater, and Dennis F. Vanderwerf, College Grove, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 11, 1979, Ser. No. 29,706
Int. Cl.[2] G03B *21/60*
U.S. Cl. 350—126 **5 Claims**



1. A front projection screen comprising,

a sheet incorporating a translucent layer of light diffusing particles, said sheet having first and second major surfaces,

said first surface having a matte surface finish for reducing specular reflection from said first surface,

said second surface configured as an incremental specular reflector for directing reflected light to at least one viewing zone.

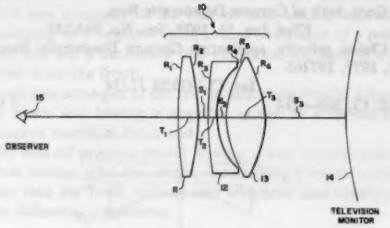
4,206,970

CHROMATICALLY CORRECTED VIRTUAL IMAGE VISUAL DISPLAY

William M. Kahlbaum, Jr., Hayes, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 23, 1978, Ser. No. 953,389
Int. Cl.[2] G02B *13/16, 9/16*
U.S. Cl. 350—175 E **3 Claims**

1. A three element, in-line, large diameter, optical lens with a focal length of 61 cm, comprising a front convex-convex element, a central convex-concave element, and a rear convex-convex element, said lens being constructed according to the



technical description below, wherein R_1, R_2, R_3, R_4, R_5, and R_6 are radii of curvature of the surfaces:

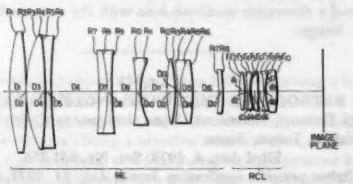
Element	Radius (cm)	
11	R_1 =	112.89
	R_2 =	−63.66
12	R_3 =	181.43
	R_4 =	37.03
13	R_5 =	47.04
	R_6 =	−58.93

4,206,971

REAR CONVERSION LENS

Yoshinari Hamanishi, Tokyo, and Soichi Nakamura, Kamakura, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Jul. 27, 1978, Ser. No. 928,423
Claims priority, application Japan, Jul. 29, 1977, 52-90508
Int. Cl.[2] G02B *15/02, 9/34, 9/60*
U.S. Cl. 350—183 **5 Claims**



1. A rear conversion lens mountable to the image side of a photographic lens to make the composite focal length of the rear conversion lens and the photographic lens greater than the focal length of the photographic lens, comprising:

a divergent forward lens group comprising three components which are, in order from the object side, a biconvex positive lens, a biconcave negative lens with its more curved surface facing the image side, and a positive lens with its more curved surface facing the object side; and

a divergent rearward lens group disposed on the image side of said forward lens group and comprising two components which are, in order from the object side, a biconcave negative lens with its more curved surface facing the image side and a biconvex positive lens with its more curved surface facing the object side.

4,206,972

HIGH RESOLVING OBJECTIVE COVERING A WIDE SPECTRAL RANGE

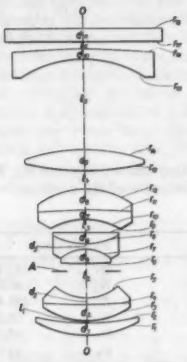
Eberhard Dietzsch, 100, Emil-Höllein-Strasse, Jena, District of Gera, and Gerhard Eberitsch, 96, Grosseutersdorf, District of Gera, both of German Democratic Rep.

Filed Jan. 13, 1978, Ser. No. 864,839

Claims priority, application German Democratic Rep., Jan. 27, 1977, 197105

Int. Cl.[2] G02B 11/34

U.S. Cl. 350—214 7 Claims



1. A high-resolving objective based upon the double gauss type covering a wide spectral range, particular for taking aerial photographs, comprising, considered in the direction of light propagation and arranged about an axis O—O,

a collective meniscus lens with the concave face to the image side,

a first cemented meniscus type lens with the concave face to the image side,

an aperture,

a cemented collective triple lens constituted of a first collective lens, a biconcave lens of short flint glass material with a severely reduced partial dispersion in the shortwave range of the spectrum, and a second collective lens,

a second cemented meniscus type lens with the convex face to the image side,

a biconvex lens,

and a diverging meniscus lens with the convex face to the image.

4,206,973

RETROFOCUS TYPE WIDE-ANGLE OBJECTIVE

Keiji Ikemori, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 4, 1978, Ser. No. 931,255

Claims priority, application Japan, Aug. 11, 1977, 52-96442

Int. Cl.[2] G02B 9/64

U.S. Cl. 350—214 3 Claims

1. A retrofocus type wide angle objective lens comprising, from front to rear, a first positive meniscus lens of forward convexity, a second negative meniscus lens of rearward concavity, a third positive lens, a fourth negative lens, the rear surface of said third positive lens and the front surface of said fourth negative lens having curvatures of the same sign, a fifth bi-convex lens with its front surface having a stronger curvature, a diaphragm, a sixth biconvex lens with its rear surface having a stronger curvature, a seventh biconcave lens with its front surface having a stronger curvature, and eighth and ninth positive meniscus lenses of foward concavity, said objective satisfying the following conditions:

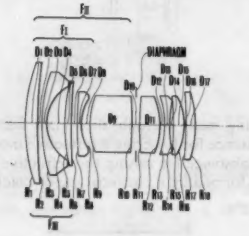
$$0.5F \leqq |F_I| \leqq 0.75F,\ F_I<0 \quad (1)$$

$$2.5F \leqq |F_{II}| \leqq 4.5F,\ F_{II}<0 \quad (2)$$

$$0.29 \leqq (D9+D11)/L \leqq 0.42 \quad (3)$$

$$|1/R12-1/R13| \leqq 0.13/F \quad (4)$$

$$0.02F \leqq D12 \leqq 0.1F \quad (5)$$



wherein F is the focal length of the entire system; F_I is the composite focal length of the first to fourth lenses; F_{II} is the composite focal length of the first to fifth lenses; L is the length of the lens system from the front surface of the first lens to the rear surface of the ninth lens; D9 is the axial thickness of the fifth lens; D11 is the axial thickness of the sixth lens; R12 is the radius of curvature of the rear surface of the sixth lens; R13 is the radius of curvature of the front surface of the seventh lens; and D12 is the axial air separation between the sixth and seventh lenses.

4,206,974

HIGH RESOLUTION OBJECTIVE LENS SYSTEM

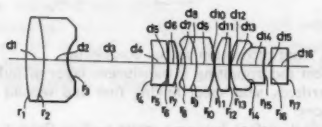
Haruo Maeda, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 1, 1978, Ser. No. 930,015

Claims priority, application Japan, Aug. 11, 1977, 52-96275

Int. Cl.[2] G02B 9/62, 9/61

U.S. Cl. 350—215 6 Claims



1. A high reduction ratio objective lens system comprising a first cemented doublet lens component consisting of a positive lens element and a negative lens element, a second positive lens component, a third positive lens component, a fourth negative cemented doublet lens component, a fifth positive lens component and a sixth cemented doublet lens component consisting of a negative meniscus lens element having a convex surface on the object side and a positive thick meniscus lens element, and said lens system satisfying the following conditions:

$$1.45f \leqq d_7+d_8+d_9 \leqq 2.0f \quad (1)$$

$$0.6 \leqq |r_8|/|r_7| \leqq 0.95 \quad (2)$$

$$3.6f \leqq d_3 \leqq 4.0f \quad (3)$$

$$1.0 \leqq |r_8|/r_3 \leqq 1.25 \quad (4)$$

wherein the reference symbols r_3, r_7 and r_8 represent radii of curvature on the film side surface of the first lens component, the film side surface of the third lens component and the object

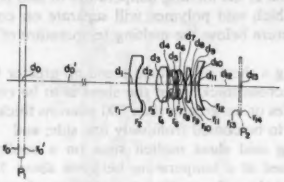
side surface of the fourth lens component respectively, the reference symbols d_3 and d_7 designate airspace between the first and second lens components and that between the third and fourth lens components respectively, the reference symbols d_8 and d_9 denote thicknesses of the respective lens elements of the fourth lens component and the reference symbol f represents focal length of the lens system as a whole.

4,206,975

RETROFOCUS TYPE WIDE-ANGLE LENS SYSTEM

Haruo Maeda, Hino, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1978, Ser. No. 944,655
Claims priority, application Japan, Sep. 27, 1977, 52-115706
Int. Cl.² G02B *11/32*
U.S. Cl. 350—215 **6 Claims**



1. A retrofocus type wide-angle lens system for use in micro readers, micro printers, facsimiles, etc. comprising a first negative meniscus lens component having a convex surface on the object side, a second positive lens component, a third biconcave lens component, a fourth positive lens component, a fifth positive lens component and a sixth negative meniscus lens component having a concave surface on the image side, and said lens system satisfying the following conditions:

(1) $-3.5f \leqq f_1 \leqq -1.2f$
(2) $0.85 \leqq r_8/r_5 \leqq 1.25$
(3) $0.06f \leqq d_5+d_6 \leqq 0.12f$
(4) $0.12f \leqq d_6+d_7 \leqq 0.24f$

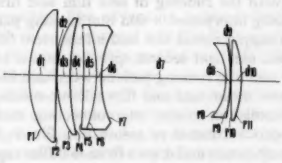
wherein the reference symbol f represents focal length of the entire lens system as a whole, the reference symbol f_1 designates focal length of the first lens component, the reference symbols r_5 and r_8 denote radii of curvature on the object side surface of the third lens component and the image side surface of the fourth lens component respectively, the reference symbols d_5 and d_7 represent thicknesses of the third and fourth lens components respectively and the reference symbol d_6 designates the airspace between the third and fourth lens components.

4,206,976

COMPACT TELEPHOTO LENS

Nozomu Kitagishi, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 28, 1978, Ser. No. 928,790
Claims priority, application Japan, Aug. 2, 1977, 52-92729
Int. Cl.² G02B *9/60*
U.S. Cl. 350—218 **3 Claims**



1. A compact telephoto lens comprising:

a first lens of positive power having a rear surface and a front surface with its front surface having a larger curvature than its rear surface;

a second lens arranged to the rear of said first lens and having a positive power in a forwardly convex meniscus form;

a third lens arranged to the rear of said second lens and consisting of a negative doublet lens composed of a positive lens and a biconcave lens cemented together in this order from the front;

a fourth lens arranged to the rear of said third lens by a large air space and having a negative power in a forwardly concave meniscus form; and

a fifth lens of positive power having a rear surface and a front surface with the rear surface having a larger curvature than the front surface, said telephoto lens satisfying the following conditions:

$$\frac{1.5}{F} < \phi 1 < \frac{2.5}{F}$$

$$0.15F < d1+d2+d3+d4+d5+d6 < 0.25F$$

$$\frac{-0.15}{F} < \phi 4,5 < \frac{0.41}{F}$$

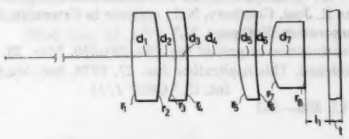
where F is the focal length of the entire lens system; $\phi 1$ is the refractive power of the first lens; $\phi 4,5$ is the composite refractive power of the fourth and fifth lenses; and d are the axial thicknesses of the first three lenses and the axial air separations therebetween.

4,206,977

REPRODUCING OBJECTIVE FOR VIDEO DISKS

Atsuo Goto, Tachikawa, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 938,256
Claims priority, application Japan, Sep. 13, 1977, 52-110240
Int. Cl.² G02B *9/34*
U.S. Cl. 350—220 **4 Claims**



1. A reproducing objective for video disks comprising a first, second, third and fourth lenses arranged in the order from the reproducing light source side, said first lens being a biconvex lens, said second lens being a negative meniscus lens, said third lens being a positive lens, said fourth lens being a positive lens, said reproducing objective for video disks satisfying the following conditions:

(1) $-1.5f < r_3 < -0.9f$
(2) $0.7f < r_7 < 1.1f$
(3) $[0.4f < d_4] 0.5f < d_4 < 0.6f$
(4) $[n_1, n_3, n_4 < 1.7] n_1, n_3, n_4 = 1.77861$
(5) $[n_2 < 1.6] n_2 = 1.51462$

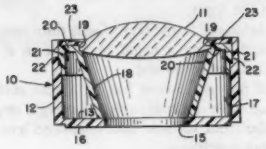
wherein reference symbol r_3 represents the radius of curvature of the surface on the reproducing light source side of the second lens, reference symbol r_7 represents the radius of curvature of the surface on the reproducing light source side of the fourth lens, reference symbol d_4 represents the airspace between the second and third lenses, reference symbols n_1, n_2, n_3 and n_4 respectively represent refractive indices of respective lenses, and reference symbol f represents the focal length of the lens system as a whole.

4,206,978

LIGHT REFLECTING MAGNIFIER

Norbert Leopoldi, 4180 Marine Dr., Chicago, Ill. 60613

Filed Jan. 29, 1979, Ser. No. 7,506
Int. Cl.[2] G02B 7/02, 25/02
U.S. Cl. 350—252 2 Claims



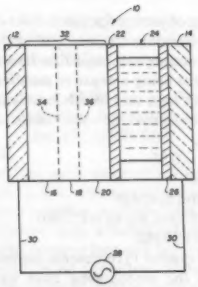
1. A light reflecting reading magnifier including an enclosed mounting, a magnifying lense supported in the mounting in spaced relation to a reading surface, a sloping inside reflecting surface converging downwardly from the perimeter of the lense to said reading surface, said mounting including an outer vertical wall and said inside surface comprises an inner wall in spaced relation to the outer wall, a bottom wall associated with said outer wall, a top wall in association with said inner wall disposed in vertically spaced relation to the bottom wall, an opening in the bottom wall aligned with the bottom end of said inner wall, said top wall fits within the inside dimensions of said outer wall and terminates in a depending flange enclosed within the outer wall, a bezel overlying said top wall and confining the edges of said lense, a bearing pad on the underside of said bottom wall surrounding said opening, said top wall has an outer depending flange fitting within the inside diameter of the outer wall, and opposing shoulders on the depending flange and outer wall complementally engaged.

4,206,979

ELECTRO-OPTIC MODULATOR

Steven R. Jost, Cranbury, N.J., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation-in-part of Ser. No. 781,690, Mar. 28, 1977, abandoned. This application Jun. 27, 1978, Ser. No. 919,471
Int. Cl.[2] G02F 1/13
U.S. Cl. 350—342 3 Claims



1. In a transmissive electro-optical element comprised of an electro-optic film between alignment layers and a photoconductive layer located between a pair of transparent electrodes, the improvement wherein the photoconductive layer includes multiple n-type CdS photoconductors with a p-type CdS:Cu photoconductor therebetween.

4,206,980

REVERSIBLY TRANSPARENT-TRANSLUCENT FILM AND METHOD OF MAKING SAME

Dennis L. Krueger, Hudson Township, St. Croix County, and Richard L. Volgren, Balsam Lake Township, Polk County, both of Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Apr. 24, 1978, Ser. No. 899,239
Int. Cl.[2] B29D 27/00
U.S. Cl. 350—359 13 Claims

1. Method of making a normally transparent film which may be rendered translucent by moderate stretching and back to transparent on relaxing, comprising:

(a) melt blending 40 to 85 parts by weight of the thermoplastic polymer having at least 5% crystallinity with correspondingly 60 to 15 parts by weight of a compound in which said polymer will dissolve or form a homogeneous dispersion at the melting temperature of said polymer but from which said polymer will separate on cooling to a temperature below the melting temperature of said polymer;

(b) forming a sheet of the melt blend no greater than about 1000 microns thick when the sheet is to be cooled from both sides or no greater than 500 microns thick when the sheet is to be cooled from only one side; and

(c) cooling said sheet molten state on a cooling surface maintained at a temperature between about 50° C. and 170° C. below the melting temperature of said polymer where said polymer is polyethylene and at a temperature between about 135° C. and 170° C. for other thermoplastic polymers to form said transparent film.

4,206,981

TELECINE PROJECTOR

Yoshio Ozaki, Tokyo, and Shuichi Ohta, Fujimi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 26, 1977, Ser. No. 790,930
Claims priority, application Japan, Apr. 30, 1976, 51-49717
Int. Cl.[2] G03B 31/00
U.S. Cl. 352—14 7 Claims

1. A telecine projector for motion picture film capable of being set into a forward mode and a rewind mode comprising

film supply means and take-up means between which a film running path is formed;

film constant-speed drive means for advancing said film at an arbitrary predetermined constant speed;

shutter means for permitting illumination of said film intermittently at a predetermined constant rate;

intermittent film advancing means operatively linked to said shutter means for advancing the film past said shutter means during the intervals between intermittent periods of illumination;

film slack detecting means for detecting slack in a loop of film formed between said intermittent film advancing means and said film constant-speed drive means;

control means selectively enabling and disabling said intermittent film advancing means depending upon whether said slack in the loop of film exceeds a predetermined amount;

first and second sprocket means engaged with said film and rotated with the running of said film said first sprocket means being interposed in said film running path between said film supply means and said intermittent film advancing means, and said second sprocket means being interposed in said film running path between said film constant speed drive means and said film take-up means;

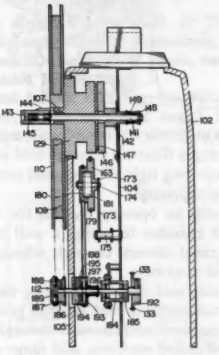
slipless transmission means interconnecting said first and second sprocket means to assure that film is fed to said film take-up means and drawn from said film supply means at the same rate;

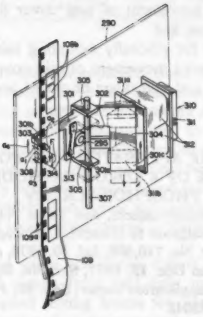
frictional drive means coupled with said slipless transmission means for aiding the latter in the rotation of said sprocket means in the sense to compensate for variations in forces

exerted on the film by said film supply means and take-up means in the course of the running of the film between said film supply means and take-up means;

urgent stop switch means actuable by the film at a location in said film running path between said supply means and said intermittent film advancing means for disabling said intermittent film advancing means without affecting the operation of the film constant-speed drive means whenever tension in the film between said supply means and said intermittent film advancing means exceeds a predetermined amount; and

film guide means between said intermittent film advancing means and said film slack detecting means to assist in forming said loop so as to prevent an irregularity in said





film from causing misoperation of said film slack detecting means;

said intermittent film advancing means including a shuttle movable into the plane of said film for engaging apertures in said film and movable parallel to said film for advancing said film, said shuttle having a pair of fingers for advancing said film, said shuttle having a pair of fingers engageable with consecutive apertures in said film, in which the spacing between said fingers is smaller than the pitch of said apertures in said film by an amount sufficient to assure that said shuttle provides accurate registration of a sequence of frames of said film in respect to said shutter means despite the occurrence of damaged or deformed apertures therein.

4,206,982

CAMERA

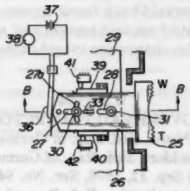
Akira Osanai, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 14, 1978, Ser. No. 942,404

Claims priority, application Japan, Sep. 16, 1977, 52-111400; Sep. 16, 1977, 52-124696[U]; Sep. 29, 1977, 52-117012; Sep. 29, 1977, 52-117013; Sep. 29, 1977, 52-117014; Sep. 29, 1977, 52-130832[U]

Int. Cl.² G03B 3/00

U.S. Cl. 352—140 **13 Claims**



1. A camera having a zoom function comprising a camera body, a lens system provided in front of the body, a finder ocular member provided at the rear of the body, a grip provided under the body for supporting the body by the hand of a person using the camera, a photo-operation button provided near the grip and operable by said hand to take a photograph, a photography operation member movable a first displacement in the linear direction for operating the camera to take photos, and further movable a second displacement in the direction approximately at a right angle to the first displacement for zoom-up or zoom-down operation, said second displacement possible only after said first displacement, and a zoom-operation member for variably operating the speed of the zoom-up or zoom-down operation in response to the amount of displacement of said zoom-operation member.

4,206,983

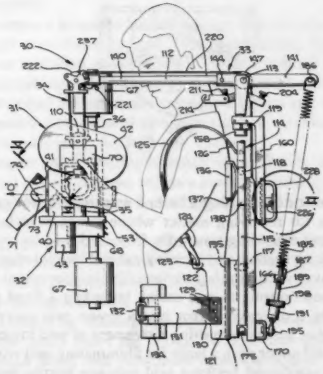
CAMERA STABILIZING BODY MOUNT

Ernst F. Nettman, and Ronald P. Dexter, both of Los Angeles, Calif., assignors to Continental Camera Systems, Inc., Van Nuys, Calif.

Filed Aug. 25, 1978, Ser. No. 936,852

Int. Cl.² G03B 17/00

U.S. Cl. 352—243 **16 Claims**



1. In combination with an apparatus for stabilizing a camera means in which the camera carrying means is adapted to be positioned in spaced relation to a cameraman's body, the provision of:

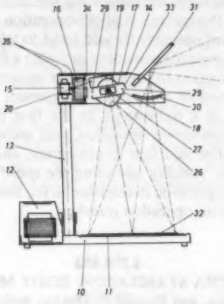
means supporting said camera carrying means including an elongated support member adapted to be positioned above the shoulder of a cameraman;
back frame means having a pivotal connection to said support member intermediate ends of the support member;
counterbalance means interconnected between said support member and said back frame means;
and suspension means carried by said support member for suspending said camera carrying means below one end of said support member;
said suspension means including
a set of pulleys on said support member;
a tension reel on said back frame means;
and a cable wound on said tension reel and extending over said pulleys for connection to said camera carrying means.

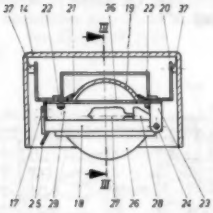
4,206,984

OVERHEAD PROJECTOR

Paul A. Mueller, Neuss, Fed. Rep. of Germany, assignor to Ed. Liesegang, Düsseldorf, Fed. Rep. of Germany

Filed Sep. 12, 1978, Ser. No. 941,669
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2747916
Int. Cl.² G03B *21/16*
U.S. Cl. 353—61 **17 Claims**





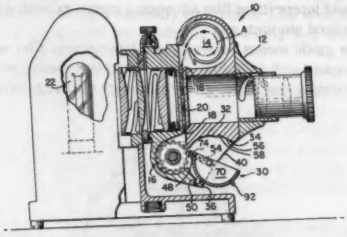
1. A projector comprising a base, a working surface carried by said base for receiving matter whose image is to be projected, a stand extending upwardly from said base to one side of said working surface and a casing carried by said stand and extending over said working surface, the improvement comprising a lamp housing in said casing including a fixed upper part carrying a concave mirror and a lower part carrying a condenser lens, means permitting movement of said lower part relative to said upper part, a lamp for illuminating said working surface and positioned between said concave mirror and said condenser lens, projection means for projecting an image of matter on said working surface and a base member for attaching said upper part of said lamp housing to said casing and defining an aperture through which said concave mirror projects.

4,206,985

FILMSTRIP PROJECTOR TAKE-UP

Richard L. Pitchford, Wappingers Fall, N.Y., assignor to The Singer Company, Stamford, Conn.

Filed Feb. 22, 1979, Ser. No. 13,865
Int. Cl.² G03B *21/00*
U.S. Cl. 353—68 **10 Claims**



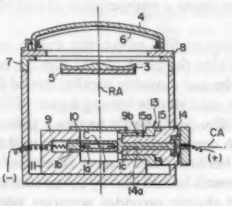
1. In a filmstrip projector having a frame, a projection gate, means for advancing a filmstrip through said projection gate, and means for projecting light through said projection gate, a filmstrip take-up comprising:
a chamber having an opening therein for removing said filmstrip, said chamber including a wall having a transverse slot formed therein through which said filmstrip may enter said chamber;
a cover for closing said chamber opening, said cover being selectively positionable in both an open position, allowing access to the inside of said chamber through said opening, and a range of closed positions, said range of closed positions extending from a position in which the opening of said cover is substantially congruent with said chamber opening, to a position in which opening of said cover lies within the confines of said chamber;
a first means for pivotally mounting said cover to said chamber allowing movement of said cover in said range of closed positions; and
a second means for pivotally mounting said cover to said chamber allowing movement of said cover between said open position and said range of closed positions.

4,206,986

EXPOSURE APPARATUS USED FOR THE MANUFACTURE OF A COLOR CATHODE-RAY TUBE PHOSPHOR SCREEN

Akira Kotoyori, Ichimiyamachi, and Tsuto Nakagawa, Chiba, both of Japan, assignors to Hitachi, Ltd., Japan

Continuation of Ser. No. 710,305, Jul. 30, 1976, abandoned. This application Dec. 13, 1977, Ser. No. 860,095
Claims priority, application Japan, Sep. 19, 1975, 50-112682; Nov. 7, 1975, 50-133048
Int. Cl.² G03B *41/00*; H01J *9/00*
U.S. Cl. 354—1 **8 Claims**



1. An exposure apparatus used for the manufacture of a color cathode-ray tube phosphor screen comprising:
a device frame to which a face-plate is to be mounted;

a lamp house located in said device frame and having an opening; and

an exposure lamp having a light emitting section including an effective light emitting section, a lamp base rigidly secured to said light emitting section, and a supporting and adjusting means which is removably secured to the inner wall of said opening of said lamp house for supporting said lamp base and thereby said light emitting section within said lamp house and which is operatively associated with said lamp base for adjusting the alignment of said effective light emitting section positionally in relation to said lamp house.

4,206,987

EXPOSURE ADJUSTING DEVICE FOR CAMERA SYSTEM

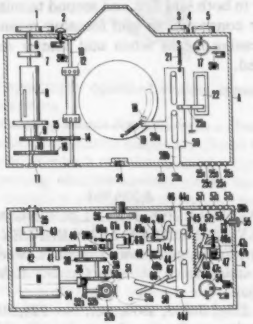
Akio Sunouchi; Ryuji Tokuda, both of Tokyo; Masanori Uchidoi, Yokohama; Kenichi Kumazawa, Machida, and Tomonori Iwashita, Fuchu, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 25, 1978, Ser. No. 927,826

Claims priority, application Japan, Aug. 3, 1977, 52-93499

Int. Cl.[2] G03B *7/08, 9/02, 1/18*

U.S. Cl. 354—44 **8 Claims**



1. An exposure control apparatus for a camera removably equipped with a motor drive unit comprising:

A. a first system mounted in the camera and having:

(a) light measuring means arranged to receive light and capable of producing an electrical signal proportional to the level of brightness of an object being photographed;

(b) manually operable shutter speed setting means to set a desired shutter speed value and capable of producing an electrical signal proportional to the set value of shutter speed;

(c) exposure value computing means responsive to the electrical signals from said light measuring and said shutter speed setting means for producing an output representative of an exposure value;

(d) a diaphragm device, the aperture of which is adjustable either manually or automatically in accordance with the computed exposure value obtained through computation performed by said exposure value computing means;

(e) movable means operatively connected to said diaphragm device;

(f) signal forming means for producing an electrical signal proportional to the amount of movement of said movable means;

(g) a first terminal arranged to have the output of said exposure value computing means applied thereto; and

(h) a second terminal arranged to have the output of said signal forming means applied thereto; and

B. a second system mounted in said motor drive unit to be attached to said camera, said second system having:

(i) a third terminal arranged to electrically contact said first terminal;

(j) a fourth terminal arranged to electrically contact said second terminal;

(k) diaphragm adjusting means arranged to operate in response to a release actuation of the camera for actuating said movable means;

(l) locking means for stopping adjustment operation of said diaphragm adjusting means; and

(m) control means for comparing the computation output of said exposure value computing means received from said third terminal with the output of said signal forming means received from said fourth terminal and for actuating the locking means when the difference between the value of the two outputs reaches a predetermined value,

whereby automatic control over said diaphragm device becomes possible when said motor drive unit is attached to said camera body.

4,206,988

VIEWFINDER FOR SINGLE LENS REFLEX CAMERAS

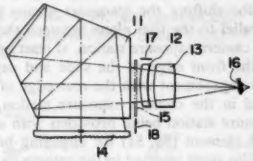
Takayoshi Miyamoto, Sakai; Takeshi Egawa, Sennan, and Yasuo Yamazaki, Kawachinagano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1979, Ser. No. 29,211

Claims priority, application Japan, Apr. 26, 1978, 53-54581[U]

Int. Cl.[2] G03B *13/02, 19/12*

U.S. Cl. 354—152 **16 Claims**



1. A viewfinder for a single lens reflex camera of the through the lens light measurement type capable of operative connection to a camera housing, comprising:

a pentagonal prism through which a viewfinder optical path extends;

an eyepiece arranged behind said pentagonal prism such that said viewfinder optical path also extends therethrough and including a movable first optical element and a fixed second optical element, said first optical element being arranged between said pentagonal prism and said second optical element and movable along a viewfinder optical axis extending through said eyepiece;

a diopter adjustment mechanism for adjustably locating said first optical element within a predetermined space extending along said viewfinder optical axis for diopter adjustment;

an eyepiece shutter movable between an advanced position wherein it blocks said viewfinder optical path and a retracted position wherein it is retracted from said viewfinder optical path;

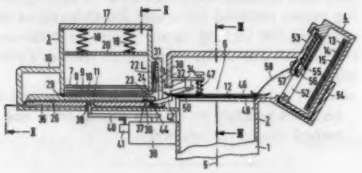
first means for shifting said first optical element toward the rear away from the prism, through said predetermined space along said viewfinder optical axis; and

second means for shifting said eyepiece shutter from said retracted position to said advanced position, said predetermined space being at least partially common to the space which said eyepiece shutter at said advanced position occupies.

4,206,989
FILM CHANGER PLATFORM FOR A SHEET FILM CAMERA

Alfred Hahn; Arthur Gall, both of Erlangen, and Wolfgang Jäger, Neunkirchen, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 7, 1978, Ser. No. 922,796
Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733947
Int. Cl.[2] G03B *19/10*
U.S. Cl. 354—182 **9 Claims**



1. A film changer platform for a sheet film camera, comprising a camera exposure station for the exposure of the film sheets, said station being centered relative to the optical axis of the sheet film camera, as well as comprising a supply magazine for the unexposed film sheets, and comprising a collector magazine for the exposed film sheets, the supply magazine (3) and the collector magazine (4) being arranged on opposite sides of the camera exposure station (6), a transport means (26) being movable in a removal direction for conveying one film sheet in each instance via a removal slot (23) of the supply magazine, a slide (35) capable of being coupled to the transport means (26) for shifting the transport means (26) and being movable parallel to the film plane between the supply magazine and the camera exposure station, at least one tang (42, 43) coupled to the front edge of the slide and capable of being brought into engagement with the rear edge of the film sheet (12) disposed in the camera exposure station, and that the camera exposure station being provided with at least one retaining catch element (50, 51) for engaging behind this rear edge of the film sheet inserted in the camera exposure station, characterized in that the transport means comprises a base plate (26), aligned parallel to the film plane, forming a limiting edge of the removal slot (23) in the lateral wall of the supply magazine (3) for the purpose of removal of the film sheet directly resting against said base plate, said base plate (26) being provided with a shoulder (29) protruding by approximately eight-tenths of the film thickness, aligned parallel to the removal slot, and associated with the rear edge of the film sheets.

4,206,990
POWER SUPPLYING SYSTEM FOR USE IN AN AUTOMATIC FOCUSING CAMERA

Toshinori Imura, and Akira Yamanaka, both of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 27, 1978, Ser. No. 946,532
Claims priority, application Japan, Oct. 5, 1977, 52-120189
Int. Cl.[2] G03B *3/10, 7/08*
U.S. Cl. 354—195 **8 Claims**

1. A power supplying system for use in a camera comprising in combination:

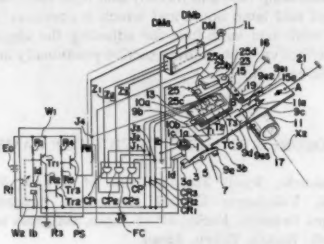
a source of electric power;

an automatic distance measuring system for producing, upon receipt of an electric power from said power source, a signal indicative of the distance from the camera to a target object to be photographed;

an objective lens movable relative to a focal plane of the camera for focusing on said focal plane an image of the target object;

focusing means operatively connected to said objective lens and said automatic distance measuring system actuable for moving said objective lens in accordance with said signal; and

a shutter release button including a switch mechanism connected to said source of electric power and said automatic distance measuring system and having first and second terminals disposed adjacent to and insulated from each

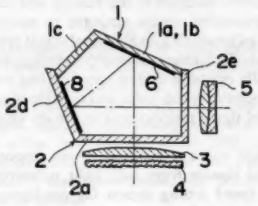


other on a top surface of saud shutter release button for connecting electric power from said power source to said automatic distance measuring system upon application of a finger to both said first and second terminals, and a shaft member connected to said focusing means for actuating said focusing means when said shutter release button is depressed.

4,206,991
PENTAGONAL ROOF REFLECTING MIRROR ASSEMBLY FOR SINGLE LENS REFLEX CAMERAS

Toshio Kobori, Sakai, and Isamu Uchida, Kawachinagano, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 3, 1978, Ser. No. 921,236
Claims priority, application Japan, Jul. 20, 1977, 52-87755
Int. Cl.[2] G03B *13/06*
U.S. Cl. 354—225 **20 Claims**



1. A pentagonal roof type reflecting mirror assembly for use in a viewfinder optical system of a single lens reflex camera comprising:

a roof portion including at least roof walls;

a first and a second mirror provided on said roof walls;

a roof support including at least a front wall and at least a lower light transmitting wall and made of a transparent plastic material to permit light flux for said viewfinder optical system to pass through said lower light transmitting wall, said roof portion and said roof support constituting a dust tight enclosure; and

a third mirror provided on said front wall relatively opposite to said first and second mirrors to receive and reflect said light flux reflected at said first and second mirrors after it passes through said lower light transmitting wall.

4,206,992

ELECTROMAGNETIC ACTUATOR FOR SHUTTERS FOR PHOTOGRAPHIC CAMERAS

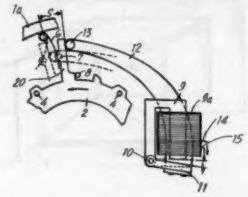
Richard Theurer, Höfen, and Dieter Rittmann, Calmbach, both of Fed. Rep. of Germany, assignors to Prontor-Werk Alfred Gauthier GmbH, Wildbad, Fed. Rep. of Germany

Continuation of Ser. No. 630,852, Nov. 11, 1975, abandoned, which is a continuation of Ser. No. 509,592, Sep. 26, 1974, abandoned, which is a continuation of Ser. No. 428,260, Dec. 26, 1973, abandoned, which is a continuation of Ser. No. 335,694, Feb. 26, 1973, abandoned, which is a continuation of Ser. No. 131,877, Apr. 7, 1971, abandoned. This application Jul. 14, 1977, Ser. No. 815,483

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1970, 2017467

Int. Cl.[2] G03B 7/00, 9/22

U.S. Cl. 354—235 8 Claims



1. An electromagnetically operated shutter apparatus for a camera which comprises

shutter blade actuating means drivable from a closed shutter position at which the shutter blades are closed to an open shutter position at which the shutter blades are open,

movement imparting electromagnetic means including an energizable stationary unitary electromagnet and an electromagnetically directly responsive unitary anchor external to the electromagnet and mounted adjacent thereto separately from and operatively independently of the shutter blade actuating means for movement from a remote position to a proximate position with respect to the electromagnet in direct response to energization of the electromagnet, and

a unitary actuator arm directly operatively interconnecting the anchor with the shutter blade actuating means and movable in response to energization of the electromagnet for driving such actuating means from the closed shutter position to the open shutter position.

4,206,993

FILM-PRINT PROCESSOR

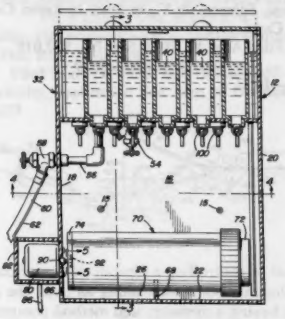
Neil A. Csepke, 3311 Ashton Pl. #152, Galveston, Tex. 77551

Filed Mar. 28, 1979, Ser. No. 24,797

Int. Cl.[2] G03D 3/08

U.S. Cl. 354—323 4 Claims

1. A film-print processor including a tank, inlet and outlet means opening into and outwardly from said tank for circulating a liquid at a predetermined temperature through said tank, a plurality of containers in said tank for circulation of said liquid therearound and for containing photographic solutions maintained at said temperature by said circulating liquid, said containers each including a valved gravity outlet disposed exteriorly of said tank, means defining an upwardly opening sump spaced vertically below said outlets for catching solutions which may drip therefrom, said sump including support means therein for supporting an elongated horizontal cylindrical developing drum therefrom over said sump and for angular displacement about the longitudinal axis of said drum, drive means operative to drive said drum at a predetermined angular speed, said outlet means for said tank comprising a drain line defining an inlet end opening into an upper portion of said tank below the upper end of said containers and an outlet end opening downwardly into said sump, said drain line functioning to define an automatic liquid level within said tank, said tank including a lower selectively openable and closable drain outlet therefor opening outwardly of said tank downwardly into



said sump, said sump including a low drain opening therefor through which liquids discharged into said sump are drained therefrom.

4,206,994

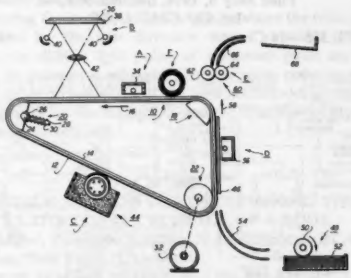
BELT TENSIONING SYSTEM

Morton Silverberg, Rochester, and Ralph A. Hamaker, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 20, 1978, Ser. No. 944,235

Int. Cl.[2] G03G 15/00; B65H 17/32

U.S. Cl. 355—3 BE 10 Claims



6. A reproducing machine of the type wherein an endless belt arranged to have a latent image of an original document recorded thereon moves in a recirculating path through a plurality of processing stations disposed thereabout, wherein the improvement includes:

at least one post having the endless belt entrained thereabout;

a source of pressurized fluid in communication with said post for generating a fluid film between said post and the belt to at least partially support the belt and reduce friction therebetween;

means for supporting said post slidably and pivotably;

a spherical member engaging said post;

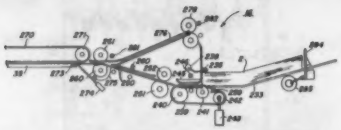
a rod having one end portion thereof defining a generally planar surface substantially normal to the longitudinal axis of said rod and engaging said spherical member; and

a spring urging resiliently said rod to press said spherical member against said post to maintain the belt under substantially uniform tension.

4,206,995
REPRODUCTION MACHINE WITH ON BOARD DOCUMENT HANDLER DIAGNOSTICS

Ernest L. Legg, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1977, Ser. No. 829,019
Int. Cl.[2] G03G *21/00*
U.S. Cl. 355—14 C 8 Claims



1. A method of controlling a reproduction machine to identify proper alignment of a sheet along its path, the reproduction machine having a memory, said method comprising:

defining a plurality of stations by disposing sensors along the path of the sheet;

entering into the memory a coded signal corresponding to one of the stations;

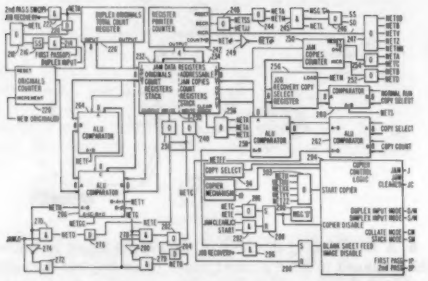
reading said memory when a sheet travels along the path; and

stopping sheet travel at the selected station corresponding to the coded signal read from the memory.

4,206,996
JOB RECOVERY METHOD AND APPARATUS

Gary A. Clark; Frederick W. Johnson, both of Longmont, and George G. Promis, Jr., Arvada, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1978, Ser. No. 903,346
Int. Cl.[2] G03G *15/00*
U.S. Cl. 355—14 C 48 Claims



26. An apparatus for job recovery due to copy jams in a copy machine during generation of at least one set of copies from a set of originals, said apparatus comprising:

means for determining, at each occurrence, the originals corresponding to copies jammed during initial processing of an entire set of originals through a copy machine;

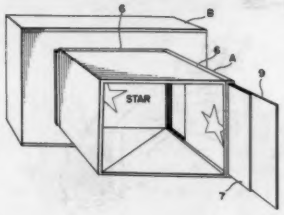
means connected with said determining means for storing indications of originals determined to correspond to said jammed copies; and

means connected with said storing means for causing the generation of replacement copies, after completion of said initial processing of said entire set of originals, to replace said jammed copies during subsequent reprocessing of said set of originals through said copy machine to assure complete copying of said set of originals.

4,206,997
METHOD AND DEVICE FOR MAKING COMBINED IMAGES FOR PHOTOGRAPHY

Robert P. Licciardi, P.O. Box 223, Shinjuku, Tokyo 160-91, Japan

Filed Jan. 18, 1978, Ser. No. 870,415
Claims priority, application Japan, Jan. 18, 1977, 52-4350
Int. Cl.[2] G03B *17/24, 27/32*
U.S. Cl. 355—39 1 Claim



1. An image combining apparatus for use in photography in the form of a rectangular parallelepiped housing comprising:

a first open frame lying in a first vertical plane, said first open frame being adapted to mount a camera;

a second open frame lying in a second vertical plane parallel to and spaced from said first open frame, said second open frame being adapted to receive a titler mechanism;

a third open frame lying in a third vertical plane perpendicular to said first and second planes and interconnecting said first and second open frames, said third open frame comprising two pairs of aligned upper and lower parallel guide rails, said first pair of guide rails being adapted to receive interchangeable image forming means, and said second pair of guide rails being adapted to receive a removable light source;

a fourth closed frame lying in a fourth vertical plane parallel to and spaced from said third open frame and interconnecting said first and second open frames;

fifth and sixth closed frames lying in spaced parallel horizontal planes and interconnecting the respective upper and lower edges of said first, second, third and fourth frames and thereby forming top and bottom walls, respectively, said bottom wall including a diagonally extending mirror guide rail; and

a rectangular one-way mirror having a length exactly corresponding to the distance between the joinder of said first and fourth frames and said second and third frames, and having a height exactly corresponding to the distance between said top and bottom walls, said one-way mirror being mounted to extend diagonally between the joinder of said first and fourth frames and said second and third frames thereby dividing said housing into a pair of equally dimensioned wedge-shaped sections, wherein said one-way mirror reflective surface faces said first and third open frame members, said one-way mirror being removably mounted within said housing and being held in a predetermined exact position by said mirror guide rail;

wherein in operation, images from both said titler and said interchangeable image forming means will be simultaneously projected into said camera bosy.

4,206,998

EXPOSURE CONTROL METHOD FOR AN AUTOMATIC COLOR PRINTER WITH SLOPE CONTROL

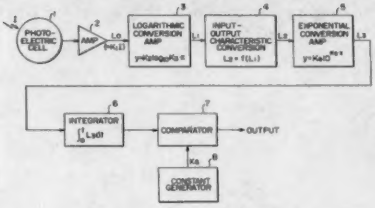
Kanji Tokuda, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 732,663, Oct. 15, 1976. This application Sep. 6, 1978, Ser. No. 940,019

Claims priority, application Japan, Oct. 17, 1975, 50/125163

Int. Cl.[2] G03B *27/78*

U.S. Cl. 355—77 1 Claim



1. A method of controlling the exposure time in an automatic color printer for obtaining color prints from color negatives in accordance with a control formula, $\log_{10} T = f(D)$, where T is the controlled exposure time and D is the large area transmission density of the color negative, wherein the conditions of

$$\log_{10}(K_6/K_4)K_2 \log_{10} K_3 K_1 I_o = 0, \text{ and}$$

$$K_5 = K_2 = -1$$

are satisfied, in which K_1, K_2, K_3, K_4, K_5, and K_6 are preselected constants and I_o is the amount of light incident to the color negative, in which a slope control is performed, the method comprising the steps of:

measuring the amount of light transmitting through the color negative and generating an output indicative of the transmission density of the negative represented by $K_1 I_o \cdot 10^{-D}$;

log converting the output based on a conversion function of $y = K_2 \log_{10} K_3 x$, where y is the output of L_1 of the log conversion and x is the input thereof, corresponding to said output $K_1 I_o 10^{-D}$ indicative of the transmission density;

converting the log converted output to a slope control value based on a conversion function represented by $L_2 = f(L_1)$, where L_2 is the slope control value and L_1 is the output of the log conversion;

exponentially converting the slope control value L_2 based on a conventional function of $y = K_4 10^{K_5 \cdot x}$ where y is the output of the exponential conversion and x is the input thereof corresponding to said input L_2, and K_6 is said preselected constant;

integrating the exponentially converted slope control value;

comparing the integrated value with a preselected constant; and

determining the exposure time of the color printer, when said integrated value has become equal to the preselected constant.

4,206,999

METHOD AND APPARATUS FOR ASCERTAINING THE MAGNITUDE AND DIRECTION OF THE FLOW SPEED IN A FLOWING MEDIUM

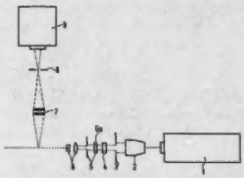
Andreas Keller, Dr. Wiggerstrasse 1, D-8100 Garmisch-Partenkirchen, Fed. Rep. of Germany

Filed Mar. 14, 1978, Ser. No. 886,350

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1977, 2712255

Int. Cl.[2] G01P *3/36*

U.S. Cl. 356—28 10 Claims



1. A method of ascertaining the magnitude and direction of the flow speed in a flowing medium, characterized by the following steps:

(a) irradiating the flow medium in a first direction with a laser beam of a defined cross-section having a maximum principal dimension;

(b) observing a defined section of the laser beam in a second direction at a defined angle to the first direction through a predetermined observation cross section and thereby defining a measuring volume at the intersection of the laser beam and the observation cross-section;

measuring the pulse duration of diffuse light pulses given off in the second direction by particles of a defined size contained in the flowing medium and passing through the measuring volume; and

(d) rotating the laser beam cross-section about the rotary axis defined by the first direction into a rotating position wherein diffuse light pulses of maximum pulse duration can be measured, whereby the maximum pulse duration and the rotary position of the laser beam cross section are a measure for the magnitude and the direction of the flow speed, respectively.

4,207,000

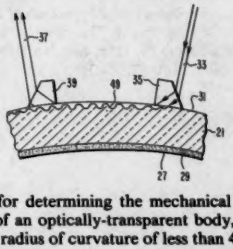
WAVEGUIDE METHOD FOR DETERMINING STRESS AT THE CONVEX SURFACE OF A BODY

Arthur Miller, Princeton Junction, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,371

Int. Cl.[2] G01B *11/16*

U.S. Cl. 356—33 5 Claims



1. A method for determining the mechanical stress at the convex surface of an optically-transparent body, said convex surface having a radius of curvature of less than 4000 centimeters, comprising

(1) introducing a polarized light beam into said body through said surface, whereby said beam propagates in said body near said surface,

(2) extracting at least a portion of said beam from said body through said surface a distance from where the beam was introduced,

(3) sensing the change in polarization state of said beam during its propagation in said body along a path length l and

(4) calculating the value of mechanical stress S from said change in polarization state according to the following relationship:

$S=\Delta\Gamma/lC$

where

$\Delta\Gamma$=change in retardation over the path length l and

C=stress-optical coefficient for the body, and subtracting that value which is due to false birefringence.

4,207,001

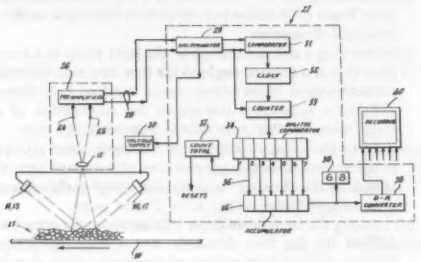
PARTICLE SIZE ANALYZER

Alban J. Lynch, and Eugene Gallagher, both of St. Lucia, Australia, assignors to The University of Queensland, St. Lucia, Australia

Continuation of Ser. No. 856,412, Dec. 1, 1977, abandoned, which is a continuation of Ser. No. 689,343, May 24, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,198

Int. Cl.[2] G01N *15/02, 21/48, 21/26*

U.S. Cl. 356—335 **20 Claims**



1. A particle size analyzer for use with a moving field of particles comprising an optical assembly producing an image of said moving field by reflected light, said optical assembly including light source means arranged to form a shadow at each edge of adjacent particles and each boundary between superimposed or overlapping particles so as to produce light-intensity transitions at said edge and boundaries; and at least one fixed phototransducer traversed by said moving image producing electrical signals responsive to said light-intensity transitions from which each said edge and boundary is detectable.

4,207,002

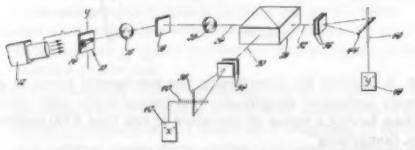
APPARATUS FOR DETECTING AN OUTPUT IMAGE OF AN OPTICAL CORRELATION

Aaron D. Gara, and Robert W. Lewis, both of Rochester, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 18, 1978, Ser. No. 970,650

Int. Cl.[2] G01B *11/14*

U.S. Cl. 356—375 **1 Claim**



1. In an optical correlation system wherein the position of an object within a search area x-y is represented by the position of a correlation image in correlation space, the image being formed by a focused beam of light, means for detecting the position of the correlation image comprising;

a beam splitter in the beam of light to form two light beams,

multiple imaging diffraction grating means in each of the two light beams arranged to display two image patterns in respective correlation planes, each image pattern comprising a series of closely spaced spots arranged in a straight line, and

a photoelectric detector in each correlation plane, each detector comprising a linear photodiode array positioned orthogonally to and intersecting the image pattern in its respective correlation plane so that a photodiode in each array is illuminated according to the position of the correlation image thereby providing a pair of electrical signals representing the coordinate position of the correlation image.

4,207,003

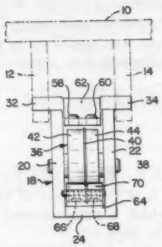
SENSING DEVICE FOR INK FILM THICKNESS IN PRINTING PRESSES

Thaddeus A. Niemiro, Lisle, Ill., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 16, 1978, Ser. No. 961,345

Int. Cl.[2] G01B *11/06;* **G01N** *21/22*

U.S. Cl. 356—382 **3 Claims**



1. An apparatus for measuring the ink film thickness being transmitted from the fountain to the plate cylinder by the roller mechanism in a printing press, said apparatus comprising:

(a) a transfer wheel rotatably mounted in contiguous relation with one of the rollers of the roller mechanism for receiving a film of ink being advanced thereby;

(b) a rotatably mounted gauge wheel including:

(i) a circumferential measuring surface defining a portion of the width of said gauge wheel disposed in nipping relation with said transfer wheel for receiving a film of ink therefrom;

(ii) a circumferential reference surface extending from said measuring surface for the remainder of the width of said gauge wheel;

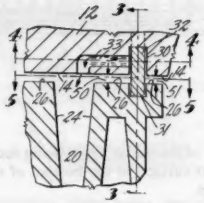
(c) sensing means defining a light emitting diode and cooperating photo-detector diode tangentially associated with the peripheral surface of each said measuring and reference surface; and

(d) circuit means connected to said sensing means including a comparitor for signaling a change in a pre-selected ratio between sensing signals derived from said measuring and reference surfaces.

4,207,004
SEALS FOR ROTARY PROCESSOR

Peter Hold, Milford, Conn., and Zehev Tadmor, Teaneck, N.J., assignors to USM Corporation, Farmington, Conn.

Filed Dec. 1, 1978, Ser. No. 965,389
Int. Cl.[2] B01F 7/10; B29B 1/06; B65D 53/06
U.S. Cl. 366—97 15 Claims



9. Apparatus for processing materials which comprises:

a rotatable element having a surface carrying at least one processing channel;

a stationary element providing a coaxial surface spaced apart from said surface of the rotatable element by a close clearance and cooperatively arranged with the processing channel to form an enclosed annular processing passage with the processing channel; said stationary element also having associated with it an inlet for feeding the particulate material to the passage, an outlet spaced apart from the inlet by a major portion of the circumferential distance about the passage for discharging material from the passage and a member located in the channel providing a surface for restraining movement of the main body of particulate material in the passage and,

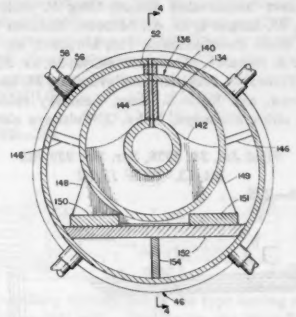
means to rotate said rotatable element in a direction from the inlet toward the material restraining surface so that the rotatable element and the restraining surface providing member coact to establish relative movement between the restrained material in the passage and rotating inner wall surfaces of the processing channel sufficient to prevent any substantial movement of the main body of material in the passage but permitting the rotating inner surfaces to drag only liquid portions of the material in contact with the inner surfaces forward for discharge and pressure is built up along the length of travel of the side walls towards the restraining surface and,

means for controlling leakage of liquid through said clearance, said leakage control means comprising a leakage liquid retaining channel carried about the circumference of a portion of said coaxial surface at said clearance said leakage liquid retaining channel operationally communicating with a leakage liquid pumping channel carried in a peripheral surface of the rotor adjacent at least one of said processing channel side walls at said clearance so that leakage liquid moved into said clearance is urged into said retaining channel by drag flow established by relative motion between said pumping channel and said retaining channel, said retaining channel being large enough to receive and retain at least substantially all leakage liquid urged into it during each revolution of said rotor; a blocking member extending into a major portion of said pumping channel to restrain movement of at least a substantial portion of leakage liquid in the retaining channel and pumping channel to thereby collect substantially all of the leakage liquid in both said retaining channel and said pumping channel at a collection position and, port means for conducting said leakage liquid from said collection position to a region of pressure lower than the pressure at said collection position.

4,207,005
PRONGED VIBRATOR

Charles E. Stanfield, P.O. Box 465, Maple Valley, Wash. 98038

Filed Sep. 2, 1977, Ser. No. 830,120
Int. Cl.[2] B01F 11/00
U.S. Cl. 366—108 20 Claims



1. A device for the vibration and breakup of compacted materials in storage structures such as grain elevators comprising:

(a) two separate half spheres in the shape of domes attached to either side of a cylindrical shell;

(b) prongs attached to the two separate half spheres and the cylindrical shell in a pattern such that the prongs are equidistant from one another;

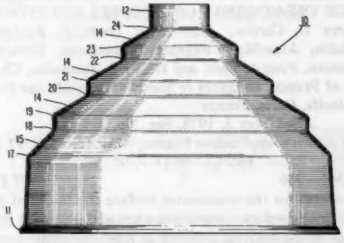
(c) means for lowering, raising or locating the shell and attached prongs; and

(d) a means for vibrating the shell and attached prongs.

4,207,006
METHOD OF MIXING AND DISCHARGING MATERIALS

William Wilson, 716 Scott St., Stroudsburg, Pa. 18360

Division of Ser. No. 665,976, Mar. 11, 1976, Pat. No. 4,068,778.
This application Nov. 3, 1977, Ser. No. 848,161
Int. Cl.[2] B01F 9/00
U.S. Cl. 366—220 8 Claims



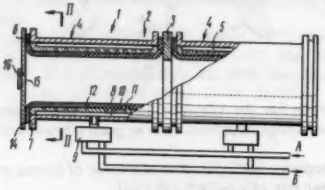
1. A method of mixing at least two materials which are in a container comprising the steps of providing a void cap having a generally conical shape and having interior side walls that include a plurality of alternately arranged annular portions and tapered portions, coupling said void cap over an opening in the container so that said small end is spaced from the container, and rotating said container end-over-end until said materials are mixed.

4,207,007

LIQUID-STIRRING DEVICE AND INSTALLATION FOR TREATING LOOSE MATERIALS

Valery S. Yamschikov, ulitsa Profsojuznaya, 98, kv. 123; Vladimir A. Moor, ulitsa Trofimova, 19, korpus 2, kv. 21; Valery I. Rekhtman, Sirenevy bulvar, 43a, kv. 106, all of Moscow; Viktor A. Belozerov, Kashirskaya ulitsa, 56, kv. 9, Domodedovo Moskovskoi oblasti; Oleg P. Smirnov, ulitsa Svobody, 83, korpus 1, kv. 60, Moscow; Vladimir M. Karbachinsky, ulitsa Profsojuznaya, 118, korpus 1, kv. 122, Moscow; Igor A. Nazarov, ulitsa Sevanskaya, 38, kv. 30, Moscow; Gleb N. Pivovarov, Nakhimovsky prospekt, 25, korpus 1, kv. 46, Moscow, and Boris S. Raev, Leninsky raion, poselok Barsuki, ulitsa Klubnaya, 1, kv. 2, Tulskaya oblast, all of U.S.S.R.

Filed Jul. 31, 1978, Ser. No. 929,783
Int. Cl.[2] B01F *15/02*
U.S. Cl. 366—275 11 Claims



1. In a liquid-stirring device comprising a shell defining a tubular chamber, a rigid annular partition dividing said tubular chamber into two sections, each provided with a resilient membrane adapted to enclose said liquid and installed co-axially with the shell of said tubular chamber with a gap relative to the chamber wall so as to form a cavity between the membrane and the shell, and a gas medium source connected to each of the said sections so that the gas medium delivered into the sections creates a pressure difference by means of the membranes actuated by the said gas medium and causing the liquid to move and agitate, the improvement comprising a rigid perforated support member stationarily mounted in each cavity-forming gap between and co-axially with the membrane and tubular chamber shell in each section with a certain radial clearance from the shell so that when the gas medium is not supplied into the cavity, the membrane rests on the perforated support member.

4,207,008

APPARATUS AND PROCESS FOR CONTINUOUS SURFACE TREATMENTS OF PROPELLANT POWDERS

Jean-Pierre L. Cartier, Angouleme; Louis J. J. Leneveu, Chateaulin; Jean-Marc Peyrard, Angouleme; Bernard W. Wiedemann, Pont de Buis, and Didier J. Treneules, Chateaulin, all of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

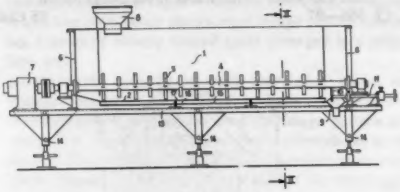
Filed May 2, 1978, Ser. No. 902,172
Claims priority, application France, May 11, 1977, 77 14407
Int. Cl.[2] B01F *7/04*
U.S. Cl. 366—309 7 Claims

1. Apparatus for the continuous surface treatment of granular propellant powders comprising a vat and a stirring system, the bottom of the said vat forming at least one chute comprising a portion of a surface of revolution, the said stirring system possessing at least one stirrer consisting of a shaft which is essentially parallel to the axis of the said corresponding chute and carries rigid blades, some of the said blades being extended by a tongue which rubs against the said chute, the number of blades which are extended by a tongue being less than the total number of blades;

(a) the said blades have a length which is slightly less than the radius of the said chute,

(b) at least one blade in four is equipped with a tongue, and

(c) the materials of the various elements which can come into contact with the grains of propellant powders are conductors of electricity,



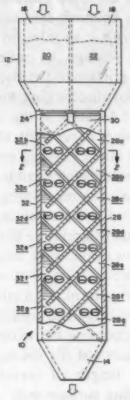
(d) the width of the said tongues being such that at least 80% of the inner surface of the bottom of the vat is swept by the tongues.

4,207,009

GRAVITY FLOW CONTINUOUS MIXER

Edwin M. Glocker, 14697 Roxbury Rd., Glenelg, Md. 21737

Filed Dec. 26, 1978, Ser. No. 972,668
Int. Cl.[2] B01F *5/06*
U.S. Cl. 366—337 8 Claims



1. A method of blending fluent material comprising the steps of introducing said material into an upper portion of an upright mixing zone, dividing said material for fall through said zone along a plurality of helical paths to the bottom of said zone, periodically diverting a first portion of said material from each of said paths to a next lower helical path for combination with material therein, diverting a second portion to a helical path below said next lower helical path for combination with material therein, causing a multiplicity of abrupt changes in direction of flow, by which divisions, diversions, combinations and direction changes there is produced at the bottom of said zone a uniformly blended material.

4,207,010

DIGITAL SYSTEM FOR CONTROL OF AN ELECTRIC TYPEWRITER

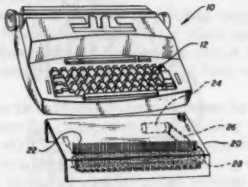
William O. Wernsing, 125 Northview Rd., Ithaca, N.Y. 14850

Filed Jul. 17, 1978, Ser. No. 925,187
Int. Cl.[2] B41J *5/30, 23/34*
U.S. Cl. 400—66 10 Claims

1. A control system for controlling the actuation of key levers in an electric typewriter having a separate key lever for

each key, said key levers being actuated in a sequence determined by data transmitted from a remote control device, comprising:

a plurality of drive levers, there being one drive lever for each of said key levers in said electric typewriter, said drive levers being pivotally mounted on a drive frame adapted to carry said drive levers to said key levers and to drive a selected one of said key levers;



a plurality of actuators, there being one of said actuators associated with each of said drive levers, one of said actuators being selected by said data to alter a position of a selected one of said drive levers on said drive frame;

drive means for driving said drive frame to effect printing of a selected character by said typewriter; and

electronic circuit means for decoding received data indicating a character to be printed and for selecting one of said actuators representative of a character being printed.

4,207,011

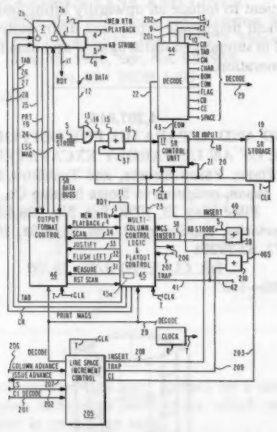
LINE SPACING AND COLUMN FORMAT CONTROL SYSTEM

Robert A. Pascoe, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 6, 1978, Ser. No. 883,762

Int. Cl.[2] B41J *25/18*

U.S. Cl. 400—279 **12 Claims**



1. In a system including a buffer having a plurality of text columns sequentially stored therein and line spacing requirements for text making up said text columns stored therein, means for reading said buffer, and means for effecting a side-by-side columnar format through playing out corresponding lines of said text columns on a print line prior to causing a printer carrier return; the improvement comprising:

(a) means for determining said corresponding lines for following text based on reading a line spacing requirement; and

(b) means included in said determining means for updating said buffer to effect proper line spacing upon playout from said buffer if a line is not to be played out on a subsequent print line.

4,207,012

INK COMPENSATING CHAMBER FOR SCRIBER

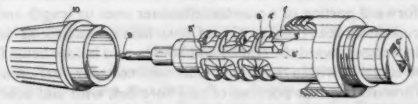
Lasse Kuparinen, Hamburg, Fed. Rep. of Germany, assignor to Koh-I-Noor Rapidograph, Inc., Bloomsburg, N.J.

Continuation-in-part of Ser. No. 725,618, Sep. 22, 1976, Pat. No. 4,095,907. This application Jan. 3, 1978, Ser. No. 866,591

Claims priority, application Fed. Rep. of Germany, Sep. 25, 1975, 7530355[U]; Sep. 25, 1975, 2542734

Int. Cl.[2] B43K *5/18*

U.S. Cl. 401—258 **6 Claims**



1. In a capillary writing pen of the type having an ink reservoir communicable with a writing tip, the improvement comprising:

(A) an expansion chamber interconnecting the reservoir and ambient air as a capillary channel apart from the writing tip and having an inner and outer wall for the flow of ink;

(i) said expansion chamber comprising at least two circumferentially extending and interconnecting chamber portions, each portion having an inner wall comprising contiguous indentations which extend axially such that, in cross-section, a triangular wave profile is defined with respect to the outer wall of said circumferentially extending chamber portions, said at least two chamber portions being interconnected, in the axial direction, by means of an axially aligned connecting channel, whereby said indentations define, within said capillary channel, successive areas of expansion and constriction, such that ambient air is entrapped in the areas of expansion and menisci of ink are formed in the areas of constriction, and perpendicularly to the flow of ink within said chamber.

4,207,013

WRITING INSTRUMENT

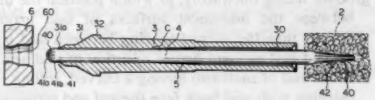
Tetsuo Shimoishi, Hamamatsu, Japan, assignor to Teibow Company Limited, Hamamatsu, Japan

Filed Jun. 9, 1977, Ser. No. 804,895

Claims priority, application Japan, May 30, 1977, 52-20598[U]

Int. Cl.[2] B43K *1/12*; B53K *15/00*

U.S. Cl. 401—265 **4 Claims**



1. In a writing instrument comprising: a cylindrical casing having a constricted forward end which forms a bore in communication with the interior space of said casing; an ink reservoir mounted in said casing at the rear portion thereof; an elongated plastic nib having a rear end portion inserted in said ink reservoir and a forward end portion projecting from the forward end of said casing, said projected forward end portion comprising a tip portion and a straight portion following said tip portion, said straight portion having a predetermined diameter, said nib having at least one capillary passage for the ink therethrough, and; an elongated nib holder which holds said

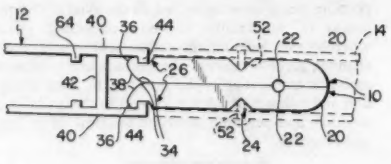
nib and which is tightly fitted in the forward end of said casing: the improvement that said holder is of a thermoplastic material and has a bore therethrough, and said nib extends through the bore of said holder so that the forward and rear end portions of said nib are projected outwardly from the corresponding ends of said holder, respectively, the intermediate portion of said nib between said forward and rear end portions thereof having an outer substantially cylindrical surface without substantial surface interstices, which is continuously parallel to the longitudinal axis of said nib, said holder within the region between the forward end and rear end thereof being fixed to said nib with an adhesive material and the tip edge of the forward end portion thereof being plasticized and deformed so that it is in tight contact with said outer surface of said intermediate portion of said nib at least at separated points around the circumference of the outer surface of said nib, said bore of said holder having a forward portion of a constant diameter over its length and the remaining rear portion of said bore having a diameter which increases toward the rear of said holder, said holder being fixed to said nib, within the region where the boundary between said forward and rear portions of said bore lies, with said adhesive material.

4,207,014

HOLLOW ROD JOINT CONNECTION

Anthony C. Worrallo, 15, Sprott Rd., Auckland 6, New Zealand

Filed Feb. 27, 1978, Ser. No. 881,591
Int. Cl.[2] B25G *3/00*; F16B *7/04*
U.S. Cl. 403—187 **10 Claims**



1. A jointing device comprising

a first element including two spaced apart portions interconnected to form a mouth;

a pair of arms, each arm having two opposed elongated faces,

a front one of said faces on each arm having means defining a transverse groove near one end thereof to receive one of said portions,

said arms being positionable with the back faces thereof juxtaposed with the front faces having said grooves facing outwardly, in which position the distance between the innermost surfaces of said grooves is greater than the normal spacing between said portions on said first element before insertion of said arms,

said one end of each arm having a curved, rolling surface merging with said back face thereof and terminating at said front face to permit said one end of said arms to be inserted into said mouth, such that said arms can be rolled from a diverging relationship into the juxtaposed position and to deform outwardly the portion of said mouth engaged by said grooves; and

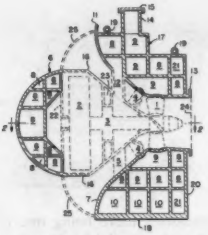
a second element comprising clip means engageable with said arms in said juxtaposed position for preventing said arms from moving toward the diverging position under the influence of the force exerted on said arms by said portion as said first element tends to return to said undeformed condition.

4,207,015

SELF-STABILIZED HYDROMOTIVE ASSEMBLY

Francisco J. G. Atencio, Estafeta Dr. Garcia, Diamante Entre Rios, Argentina

Filed Feb. 23, 1978, Ser. No. 880,635
Int. Cl.[2] E02B *9/00*
U.S. Cl. 405—78 **10 Claims**



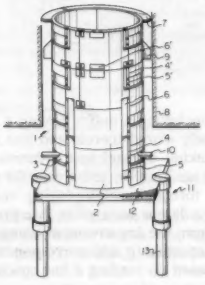
1. A hydromotive assembly for a fluid storing dam having means for directing a fluidic flow therethrough, said hydromotive assembly including a fluidic flow circulation path defined by a conduit having a lateral wall for directing a fluid flow therethrough, said conduit having a central longitudinal axis extending substantially horizontally, an energy generation unit incorporated within said conduit and actuated by said fluid flow through said conduit, said energy generation unit including a capsule-mounted generator having a motive turbine with a runner, said generator including a rotor having a diameter of a numerical magnitude substantially greater than the diameter of said runner of said motive turbine, said conduit having a first open end and a second open end for discharging said flow entering said first open end, at least one of said open ends adapted to be positioned against at least one end of said dam's fluidic directing means, said hydromotive assembly having defined in its structural body buoyancy means of a volume at least sufficient to induce an upwardly lifting pull of a substantial numerical magnitude when said hydromotive assembly is positioned in submerged status against said dam for purposes of energy generation.

4,207,016

METHOD AND APPARATUS FOR SUPPORTING THE WALL OF AN UPWARDLY EXCAVATED SHAFT

Takayuki Jinno; Yasuo Kotake, and Toshihiro Kikuchi, all of Ohdate, Japan, assignors to Dowa Mining Co., Ltd., Japan

Filed May 23, 1978, Ser. No. 908,631
Claims priority, application Japan, May 31, 1977, 52-63644; Jul. 2, 1977, 52-79291
Int. Cl.[2] E21D *3/00, 19/00*
U.S. Cl. 405—133 **11 Claims**



1. A support frame assembly for supporting a side wall of a

vertically upwardly extending shaft, said support frame assembly being capable of being constructed and inserted upwardly into the shaft without the need for workmen entering the shaft, said support frame assembly being capable of being inserted into the shaft by being intermittently thrust upwardly into the shaft by thrust means and then locked in a vertical position by means of locking means positioned vertically below the shaft, said support frame assembly comprising:

a plurality of arcuate members and a disjointing member adapted to be connected in a side-by-side manner to form a cylindrical support frame;

said arcuate members and said disjointing member having exterior surfaces adapted to face a shaft side wall and interior surfaces adapted to face the center of the shaft when said members are connected to form said support frame;

said exterior surfaces of said arcuate members having therein holding means for engagement with locking means exterior of the shaft for maintaining said support frame in a desired vertical position, and for preventing said support frame from being lowered from said vertical position;

said interior surfaces of said arcuate members and said disjointing member having extending inwardly therefrom peripheral flanges;

connecting means for joining circumferentially adjacent said flanges of said arcuate members and said disjointing member when aligned in said side-by-side manner;

said exterior surfaces of said arcuate members and said disjointing member having therein openings positioned adjacent said connecting means, said openings being of a size and configuration to allow workmen to manipulate said connecting means from exterior of said support frame; and

said disjointing member being located between and connected to two of said arcuate members such that, upon removal of the respective said connecting means, said disjointing member may be extracted from between said two arcuate means in a direction toward the interior of said support frame.

4,207,017

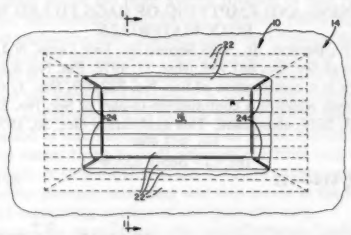
EARTHEN TANK AND LINER

Hal K. Jarrell, 9225 Katy FW, Suite 325, Houston, Tex. 77024

Continuation of Ser. No. 808,032, Jun. 20, 1977. This application Jun. 19, 1978, Ser. No. 916,935

Int. Cl.[2] E02B *5/00*

U.S. Cl. 405—270 **2 Claims**



1. A unitized earthen tank liner formed by a unitary, reinforced, fiberglass membrane built insitu which provides an impervious liner in an earthen tank;

said membrane has a bottom, sloped sidewalls connected to said bottom, and a horizontally disposed, marginal edge portion which extends respective to the earthen tank such that an overburden of earthen material can be placed thereon to thereby protect the peripheral edges of the membrane and also anchor the sides of the membrane respective to the earth;

said membrane being made from a multiplicity of panels of polyester resin impregnated fiberglass material having a paper backing bonded thereto by said resin;

said panels being arranged parallel to one another with adjacent marginal, longitudinal edges thereof being overlapped, stapled, and bonded together by a strip of fiberglass material impregnated with polyester resin;

each of said multiplicity of panels being made of a plurality of sheets of fiberglass material bonded to said paper backing with said polyester resin, adjacent ones of said sheets of fiberglass material being arranged to abut one another;

said sheets of fiberglass material are bonded together by a strip of fiberglass cloth impregnated with polyester resin and being superimposed over adjacent marginal abutting edges of said sheets of bonded fiberglass cloth to provide an elongated panel of liner material, so that said elongated panel can be rolled and transported to the earthen tank, whereupon the aforesaid tank liner can be fabricated insitu.

4,207,018

FLUID PRESSURIZING STATION FOR A PIPELINE CONVEYOR

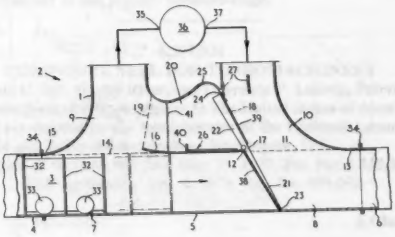
William B. Hark, Reading; Peter J. Baker, Dunstable; Alan Headford, Wooton, and Barry E. A. Jacobs, Bromham, all of England, assignors to The British Hydromechanics Research Association, Cranfield, England

Filed Dec. 15, 1978, Ser. No. 969,691

Claims priority, application United Kingdom, Nov. 7, 1978, 43538/78

Int. Cl.[2] B65G *51/04*

U.S. Cl. 406—105 **6 Claims**



1. A fluid pressurising station, for a pipeline conveyor in which load-carrying capsules are conveyed along a pipeline by means of a fluid flowing along the pipeline, comprising:

a transfer conduit having upstream and downstream ends respectively connectable to upstream and downstream portions of the pipeline for the passage of load-carrying capsules;

outlet and inlet conduits respectively connected to the upstream and downstream ends of the transfer conduit to allow fluid to flow from the upstream portion of the pipeline and to allow pressurised fluid to be fed into the downstream portion of the pipeline;

an inlet port interconnecting the inlet conduit and the downstream end of the transfer conduit and having upstream and downstream edges at the intersection between the inlet conduit and the downstream end of the transfer conduit;

an outlet port interconnecting the outlet conduit and the upstream end of the transfer conduit and having upstream and downstream edges at the intersection between the outlet conduit and the upstream end of the transfer conduit; and

a valve member mounted for pivotal movement about an axis extending transversely of the transfer conduit at or adjacent the upstream edge of the inlet port;

and comprising the improvement wherein:

first and second by-pass ports are respectively formed in the inlet and outlet conduits;

a reverse by-pass conduit extends between the first and second by-pass ports;

the first by-pass port has an edge at or adjacent the upstream edge of the inlet port; and

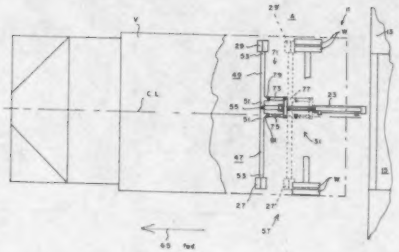
the valve member has first and second opposite ends, said valve member being moveable into a first, closed position in which the opposite ends extend across the transfer conduit to at least partially close the transfer conduit and close the first by-pass port as a result of fluid entering the downstream end of the transfer conduit through the inlet conduit whenever the transfer conduit between the upstream edge of the inlet port and the downstream edge of the outlet port is free of capsules, said valve member being moveable into a second, open position in which the opposite ends of the valve member respectively extend into the inlet port and along the reverse by-pass conduit as a result of movement of part of a load-carrying capsule into part of the transfer conduit between the upstream edge of the inlet port and the downstream edge of the outlet port and consequent fluid flow through the reverse by-pass conduit from the inlet conduit to the outlet conduit.

4,207,019

TRUCK DOCK WHEEL SAFETY CHOCK SYSTEM

Malcolm S. Cone, P.O. Box 38392, Germantown, Tenn. 38138

Filed Sep. 11, 1978, Ser. No. 941,012
Int. Cl.[2] B65G *67/02*; B60T *3/00*
U.S. Cl. 414—373 **12 Claims**



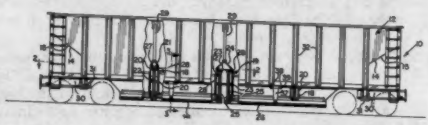
1. In a truck dock of the type having remotely controlled dockboard means which normally may selectively be moved between: (1) an operative position in which the floor of the elevated dock structure is bridged with the floor of a truck-like vehicle as it is parked on the apron of the dock for facilitating the loading and/or unloading process thereof, and (2) a stowed position in which use of the dockboard means is interrupted; of safety chock system means operatively coupled with said dockboard means for: (1) precluding the commencement of any loading and/or unloading operations involving the vehicle prior to the vehicle being properly chocked in place, and (2) conversely precluding the likelihood of inadvertent movement of the vehicle away from the dock prematurely before the actual completion of the loading and/or unloading operations; said safety chock system means comprising a main body member fixedly attached to the apron of the dock and being arranged thereon so as to be straddled by the wheels of the vehicle as it is being brought into a properly parked position, a pair of wheel engageable chock means for engagement with the rearward wheel structure of the vehicle in selectively rendering the vehicle substantially immovable, reach means for operatively coupling said pair of wheel engageable chock means to said main body member, and wheel chock actuating means for remotely controlling the movement of said reach means to enable said pair of wheel engageable chock means to be remotely operable between a "vehicle chocked" position and a "vehicle not chocked" position.

4,207,020

HOPPER CAR DOOR LATCHING ARRANGMENT

James J. Schuller, Crete, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Filed Apr. 17, 1978, Ser. No. 896,652
Int. Cl.[2] B61D *7/18, 7/30*; B65G *67/24*
U.S. Cl. 414—378 **10 Claims**



1. In a railway car having a body including a hopper structure provided with a bottom discharge opening;

a door arrangement for said opening including a pair of doors positioned in a closed position in contiguous side by side relation beneath said opening,

means hingedly supporting said doors on said body for relative movement laterally outwardly to opposite sides of said opening, the improvement of a door actuating mechanism for each door each comprising:

an arm pivotally supported on said hopper laterally outwardly of each said door,

cam engageable means on said arm,

a link pivotally connected to said arm and to each said door,

said link during engagement of said cam engaging means with a track side cam exerting an outward pulling force on each door to move the same from a closed to an open position,

a keeper member mounted directly on each of said doors,

a latch member mounted on said hopper structure and engageable with said keeper member in the closed position of each door for locking the same against outward movement, and

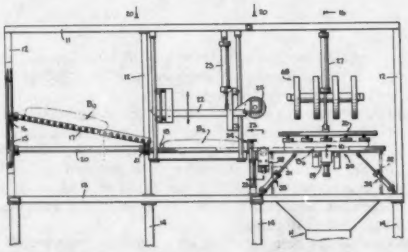
actuating means on said link and operative during the initial outward pulling movement of said link to engage said latch and disengage the same from said keeper member, thereby permitting each of said doors to move to an open position.

4,207,021

OPENING AND EMPTYING OF BAGS FILLED WITH BULK MATERIALS

Harry W. Burdett, Jr., 9-05 Second St., Fair Lawn, N.J. 07410

Division of Ser. No. 887,715, Mar. 17, 1978, Pat. No. 4,134,508, which is a continuation of Ser. No. 722,059, Sep. 1, 1976, abandoned, which is a continuation-in-part of Ser. No. 532,704, Dec. 13, 1974, abandoned. This application Oct. 30, 1978, Ser. No. 955,909
Int. Cl.[2] B65G *65/04*
U.S. Cl. 414—412 **26 Claims**



1. A bag opening and emptying machine comprising table means for receiving a full bag to be opened and emptied, squar-

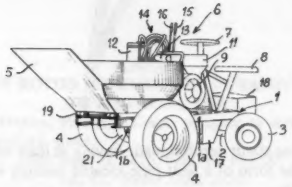
ing means for rendering side and end walls of said bag substantially perpendicular to a lower bag wall when on said table means, cutting means having means for heating the same for cutting a bag by a combination of heat and pressure, said cutting means being mounted adjacent to said table means, means providing relative movement between said bag and said cutting means whereby at least one of said bag walls is contacted and pressed momentarily by said heated cutting means for producing a line of cut through the bag wall, and means for emptying said bag.

4,207,022

POWERED VEHICLE FOR LOADING, TRANSPORTATION AND UNLOADING OF HEAPED MATERIALS

Claude Castel, Herblay, France, assignor to COVEM - Compagnie de Vente d'Engins Mecaniques, Epinay-Surorge, France

Continuation of Ser. No. 692,819, Jun. 4, 1976, abandoned. This application Jun. 14, 1978, Ser. No. 915,420
Claims priority, application France, Jun. 9, 1975, 75 17964
Int. Cl.[2] E02F *3/28*
U.S. Cl. 414—685 **4 Claims**



1. A powered vehicle for unassisted loading, transporting and unloading heaped material, comprising

(a) a chassis having a transverse shaft thereon and a relatively movable part comprising at least a supporting portion which rests substantially horizontally on said chassis in the transportation and unloading positions thereof and which is pivotally mounted on said transverse shaft;

(b) running gear;

(c) means for mounting said transverse shaft substantially directly above the front axis of rotation of said running gear, said movable part having a portion extending from said transverse shaft towards the front of said vehicle;

(d) means for driving and controlling said running gear;

(e) skip means having a front end wall upwardly diverging from the vertical axis thereof in said transportation position, and arranged with its base resting on said supporting portion of said movable part in one position thereof, said skip means being located adjacent the front end of said vehicle in its normal forward direction of movement;

(f) means pivotally mounting said skip means at the front of said supporting portion of said movable part;

(g) means for moving said skip means between loading and transportation positions, comprising an element for pivoting said movable part with said skip means thereon about the front of said chassis and said supporting portion of said movable part, whereby said front end wall of said skip means is brought to a loading position substantially parallel with the ground; and

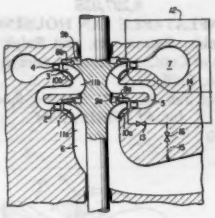
(h) means for moving said skip means between transportation and unloading positions, comprising an element for pivoting said skip means at most 90° about the front of said supporting portion of said movable part, while said supporting portion retains its horizontal position, and bearing respectively on said skip means and said supporting portion of said movable part, whereby said front end wall of said skip means is brought to an unloading position substantially downwardly sloping from the vertical.

4,207,023

MULTISTAGE HYDRAULIC MACHINE

Sachio Tsunoda, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Filed Jun. 8, 1978, Ser. No. 913,855
Int. Cl.[2] F01D *3/00*
U.S. Cl. 415—106 **4 Claims**



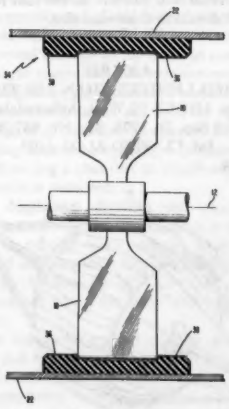
1. In a multistage hydraulic machine having guide vanes for each said stage, said machine being provided with an outer backchamber, an inner backchamber and a sidechamber around the guide vanes of each stage, the improvement comprising a first piping having a control valve and connected between the outer backchamber in the highest pressure-stage and the sidechamber in the lowest pressure-stage, and a second piping connected between the outer backchamber and the sidechamber in the highest pressure-stage.

4,207,024

COMPOSITE SEAL FOR TURBOMACHINERY

Robert C. Bill, Hocky River, and Lawrence P. Ludwig, Fairview Park, both of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Division of Ser. No. 801,290, May 27, 1977, Pat. No. 4,135,851. This application Aug. 4, 1978, Ser. No. 931,090
Int. Cl.[2] F01D *11/08*
U.S. Cl. 415—174 **6 Claims**



1. A gas path seal for a turbine or the like having a plurality of blades mounted for rotation about an axis comprising

a stator shroud having an aerodynamically smooth surface on a thin layer of a deformable metallic material that is wearable relative to said blades and closely spaced to the blade tips whereby said shroud is deformed when said blades rub against said surface,

a yieldingly deformable rubber backing surrounding said

layer to receive said deformed shroud thereby reducing said blade wear by limiting the magnitude of normal forces measured radially inward which are developed between the blade tips and the shroud, and

a rigid mounting housing surrounding said backing and being secured to the outermost surface of said backing.

4,207,025

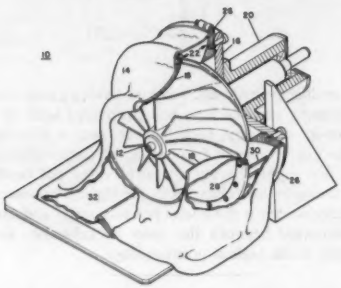
INFLATABLE FAN HOUSING

Clifton J. Reynolds, Sacramento, and Ralph H. Shultz, Jr., Roseville, both of Calif., assignors to Aerojet-General Corporation, La Jolla, Calif.

Filed Jan. 22, 1979, Ser. No. 5,367

Int. Cl.² F04D *29/44*

U.S. Cl. 415—200 **2 Claims**



1. An inflatable housing for a fan rotor comprising:

a collapsible surface having two circular edges; and

support means maintaining said circular edges of said collapsible surface at positions spaced along the rotor axis of rotation such that the space between said edges forms a slot for receiving air flow from the rotor; wherein

said collapsible surface is shaped to be inflatable during operation by air from the rotor into a volute that encircles said rotor and extends across said rotor in at least one axial direction from said slot.

4,207,026

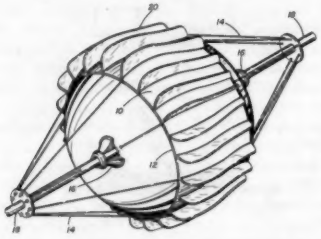
TETHERED LIGHTER THAN AIR TURBINE

Oliver J. Kushto, 1410 US 92 West, Auburndale, Fla. 33823

Filed Sep. 29, 1978, Ser. No. 947,269

Int. Cl.² F03D *11/00, 1/06*

U.S. Cl. 416—84 **8 Claims**



1. A tethered lighter than air turbine for producing rotational energy from air currents comprising:

a lighter than air body having an axis of rotation;

a drive line having two ends, said line being affixed to said body at one end and aligned along said axis of rotation;

appendages attached to said body and disposed thereon for causing said body to rotate about said axis of rotation when air currents impinge upon said appendages;

means attached to the other end of said drive line for connecting said line to a load.

4,207,027

TURBINE STATOR AEROFOIL BLADES FOR GAS TURBINE ENGINES

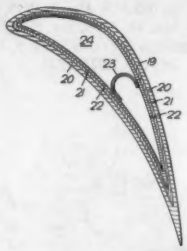
Brian Barry, Duffield, England; David W. Artt, Belfast, Northern Ireland, and Susan M. Allen, Belper, England, assignors to Rolls-Royce Limited, London, England

Filed Arg. 4, 1977, Ser. No. 822,960

Claims priority, application United Kingdom, Aug. 12, 1976, 33550/76

Int. Cl.² F01D *5/18*

U.S. Cl. 416—96 R **7 Claims**



1. A turbine stator aerofoil blade having at least one portion thereof in the form of a heat pipe located entirely within the aerofoil blade,

said blade including an inner portion thereof having attached thereto a porous capillary means having relatively large openings therein, adjacent thereto a second porous capillary layer having relatively smaller openings therein, and a porous capillary layer across about the mid-portion of said blade interconnecting the opposing said second layer surfaces,

said heat pipe including a sealed container enclosing a condensible vapor, and said porous capillary means for transporting the condensed vapor from a cooler area to a hotter area by a vapor pressure gradient established between the cooler area and the hotter area, the vapor being condensed in the cooler area,

such that, in operation, the hot gases impinge upon said blade resulting in the melting and subsequent vaporization of the condensible vapor contained therein, the material so vaporized being transported by vapor pressure differences to the cooler regions where it condenses, and after condensation the liquid material is pumped by capillary action through said porous layers back to the hotter regions such that a substantially isothermal temperature distribution is maintained.

4,207,028

EXTENDABLE AND RETRACTABLE PROPELLER FOR WATERCRAFT

Sven O. Ridder, Tykovagen 4B, 181 61 Lidingo, Sweden

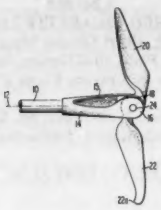
Filed Jun. 12, 1979, Ser. No. 47,795

Int. Cl.² B63H *1/24*

U.S. Cl. 416—142 **12 Claims**

1. A propeller assembly for a watercraft comprising a propeller shaft, a propeller including a hub and first and second diametrically opposed blades fixed relative to each other for movement as a unit, and means mounting the propeller to the propeller shaft for pivotal movement about an axis extending generally transversely to the propeller shaft between an extended position with the blades projecting generally radially

from said shaft and a folded position with one propeller blade extending forwardly generally along the propeller shaft and



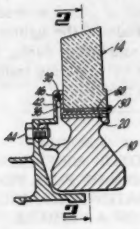
the other propeller blade extending rearwardly of the propeller shaft generally longitudinally thereof.

4,207,029

TURBINE ROTOR ASSEMBLY OF CERAMIC BLADES TO METALLIC DISC

Theodore Ivanko, Fairfield, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Jun. 12, 1978, Ser. No. 914,785
Int. Cl.[2] F01D *5/28, 5/30*
U.S. Cl. 416—241 B **1 Claim**



1. In a turbine rotor for use in a gas turbine engine, the combination comprising:

a metallic rotor disc having a plurality of slots constructed in the outer periphery thereof;

a plurality of ceramic turbine blades, each being formed with an airfoil section and a blade root, said root being loosely positioned within a disc slot;

a metallic jacket interposed between each of the blade roots and the slots;

a mounting plate secured to the rotor disc and disposed adjacent one edge of the blade;

an extension provided on said metallic jacket for cooperation with said mounting plate to form a closed slot in which a retaining wire is inserted to prevent axial movement of the blade;

a bent tab portion provided on said metallic jacket adjacent the other edge of the ceramic blade to engage the rotor and prevent axial movement of the blade; and

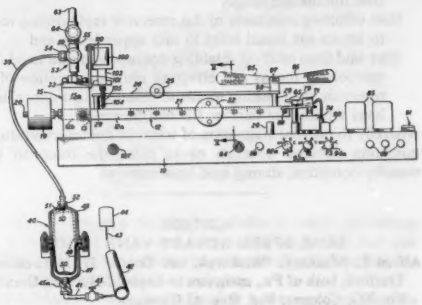
ceramic potting material interposed between each of the blade roots and its corresponding metallic jacket to support said elements in spaced relation.

4,207,030

APPARATUS FOR CONTROLLING LIQUID LEVEL IN A RESERVOIR

William S. Pearson, Hampsted, Md., assignor to Cypro, Incorporated, Hampstead, Md.

Filed Sep. 17, 1976, Ser. No. 724,115
Int. Cl.[2] F04B *41/06*
U.S. Cl. 417—7 **23 Claims**



1. In apparatus for automatically controlling liquid level in a reservoir in accordance with head pressure in a main leading from the reservoir:

means for monitoring the head pressure in the main;

a pivotally supported balance beam;

balance weight means carried by said beam and adapted to be adjusted longitudinally relative to the beam to a setting determinative of a desired liquid level to be maintained in the reservoir by operation of the apparatus;

means adjacent to one end of the beam responsive to said monitoring means and cooperative with the balance weight means for controlling the pivotal attitude of the beam substantially in agreement with monitored head pressure, within a range wherein the beam is in a first pivotal position when the monitored head pressure is indicative of said desired liquid level and in a second pivotal position when the head pressure is indicative of a liquid level in the reservoir lower than said desired level;

means at the opposite end of said beam for controlling operation of liquid supply means for the reservoir in accordance with the pivotal attitude of the beam as controlled by said balance weight means and said monitor-responsive means, so that the liquid supply means will remain inactive in said first position of the beam and will be operated in said second position of the beam to supply the reservoir;

said monitoring means comprising a pressure-sensitive hydraulic cell having a chamber in which said head pressure from the main is received;

a reversible diaphragm dividing said chamber into sub-chambers one of which sub-chambers is connected with said main to receive head pressure from the main, the other of said sub-chambers being separated from the head pressure sub-chamber by said reversible diaphragm and being in metered communication with said beam controlling means;

and pressure transmitting fluid in said other of said sub-chambers and substantially filling the metered communication with said beam controlling means;

said diaphragm being reversible from a position wherein it occupies most of the space within said head pressure sub-chamber during low head pressure in said main and the diaphragm being reversible from said head pressure sub-chamber into said other sub-chamber in response to main head pressure to force fluid through the metered communication for operating said means responsive to said monitoring means.

5. A method of controlling liquid level in a reservoir comprising:

effecting primary control of operation of reservoir replenishing means for normally maintaining an upper liquid level within a narrow fluctuation range in the reservoir during peak and minimum demand intervals;

selectively operating level drop controlling means to modify operation of said reservoir replenishing means for a selected interval of time and thereby effecting controlled level drop substantially below the lower end of said narrow fluctuation range;

then effecting operation of the reservoir replenishing means to return the liquid level to said upper level; and

after said time interval disabling operation of said level drop controlling means and effecting normal operation of the reservoir replenishing means to maintain said upper liquid level within said narrow fluctuation range;

whereby to prevent stagnation of water in the reservoir during minimum demand intervals or to place the reservoir in a standby condition, during said time interval.

4,207,031

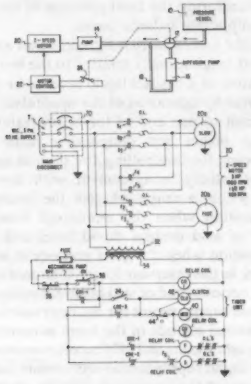
DUAL SPEED ROTARY VANE PUMP

Alfred E. Maskrey, Pittsburgh, and Donald H. Hockenberry, Trafford, both of Pa., assignors to Leybold-Heraeus GmbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,403

Int. Cl.[2] F04D *49/00*

U.S. Cl. 417—12 **5 Claims**



1. A dual speed vacuum pump comprising in combination: a mechanical rotary vacuum pump; input terminals for a source of electrical power; a two speed electrical motor directly connected to said pump for driving same, said motor having a first and a second plurality of windings which, when connected to said input terminals, cause said motor to rotate at a first speed and at a second speed respectively, with said second speed being lower than said first speed; and control circuit means for connecting said motor to said input terminals to cause said motor to rotate at said first speed for a predetermined period of time and at said second speed after said predetermined period of time, said control circuit means including: a first plurality of normally open switching contacts for connecting said first plurality of windings to said input terminals, a second plurality of normally open switching contacts for connecting said second plurality of windings to said input terminals, a first relay coil for closing said first plurality of normally open switching contacts when energized, a second relay coil for closing said second plurality of normally open switching contacts when energized, and timing means, responsive to an input signal to said control circuit means, for causing only said first relay coil to be energized for said predetermined period of time and for thereafter deenergizing said first relay coil and for energizing said second relay coil.

4,207,032

GAS-FIRED CIGARETTE LIGHTER

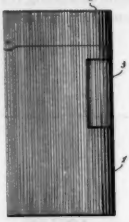
Jean-Michel Collaud; Albert Girella; Maurice Herren; Niklaus Muller, and Roger Piola, all of Geneva, Switzerland, assignors to Fabrique Suisse de Crayons Caran d'Ache S.A., Thonex, Switzerland

Filed Dec. 2, 1977, Ser. No. 857,083

Claims priority, application Switzerland, Dec. 10, 1976, 15540/76

Int. Cl.[2] F23Q *25/00*

U.S. Cl. 431—150 **16 Claims**



1. A gas-fired cigarette lighter comprising a gas reservoir, a gas distributor valve and means which make it possible to ignite the gas emerging from this distributor valve, at least one reserve supply of gas and means for draining this reserve supply into the gas reservoir, a filling device enabling simultaneous filling of the reserve supply and of the gas reservoir, the filing device comprising two serially disposed valves one of which is situated between the reserve supply of gas and the gas reservoir and the other of which is situated between the gas reservoir and the outside of the lighter, means for simultaneously opening both said valves during filling, and means for opening only said one valve during transfer of gas from said reserve supply to said reservoir.

4,207,033

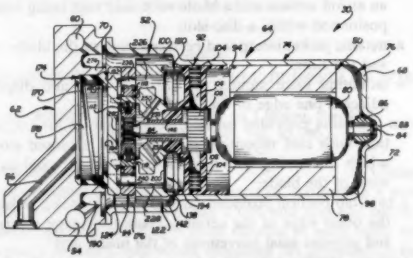
PUMP AND MOTOR ASSEMBLY FOR USE IN REGULATING A FLOW OF FUEL FROM A SOURCE OF FUEL TO AN OPERATING CHAMBER OF AN ENGINE OF A VEHICLE

Gilbert H. Drutchas; Cass, Richard, both of Birmingham, and David J. Suttkus, Warren, all of Mich., assignors to TRW Inc., Cleveland, Ohio

Filed Dec. 6, 1976, Ser. No. 748,061

Int. Cl.[2] F04B *3/00, 17/00*

U.S. Cl. 417—251 **49 Claims**



1. A pump and motor assemby for use in regulating a flow of metal from a source of fuel to an operating chamber of an

engine of a vehicle, said pump and motor assembly comprising a casing having an opening at one end, electric motor means disposed within said casing for providing an output force upon transmittal of electrical power to said electric motor means, said electric motor means including a stator fixedly connected with said casing and a rotatable armature circumscribed by said stator and having an output end portion, pump means disposed within said chamber in a coaxial relationship with said motor means for pumping fuel, said pump means including a cam ring, a rotor disposed within said cam ring and connected with said output end portion of said armature for rotation therewith, a plurality of pumping elements connected with said rotor for rotation therewith, said pumping elements and cam ring cooperating to partially define a working chamber having an inlet area and an outlet area, said pump means further including an inner cheek plate disposed between said rotor and said electric motor means, said inner cheek plate cooperating with said rotor and cam ring to further define said working chamber, and an outer cheek plate disposed on a side of said rotor and cam ring opposite from said inner cheek plate, said outer cheek plate cooperating with said rotor and cam ring to still further define said working chamber, said pump and motor assembly further including an end section fixedly connected across the open end of said casing, inlet passage means formed in said end section for receiving fuel from the source of fuel, said end section at least partially defining an inlet cavity connected in fluid communication with said inlet area of said working chamber and said inlet passage means to receive fuel from said inlet passage means, outlet passage means formed in said end section for receiving fuel discharged from said working chamber, said outlet passage means being connected in fluid communication with the engine operating chamber to enable fuel discharged from said working chamber of said pump means to be conducted to said engine operating chamber, said end section at least partially defining an outlet cavity connected in fluid communication with said outlet area of said working chamber and said outlet passage means to receive fuel discharged from said working chamber, and seal and pressure pulse dampening means disposed between said end section and pump means for preventing fluid flow between said inlet and outlet cavities and for at least partially dampening pressure pulses in fuel discharged from said working chamber, said seal and pressure pulse dampening means including a resilient member disposed in sealing engagement with said end section and said outer cheek plate to block fluid communication between said inlet and outlet cavities, said resilient member being resiliently flexible in a direction toward said inlet cavity under the influence of fluid pressure pulses in said outlet cavity to at least partially dampen the fluid pressure pulses, and spring means disposed between said resilient member and said end section for pressing said resilient member into tight sealing engagement with said outer cheek plate.

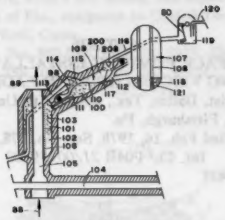
4,207,034

PUMP WITHOUT MOTORIC DRIVE

Ran Zeimer, 126 Tzur Hadassa St., Mobile Post, Emek Haela, Israel

Filed Apr. 20, 1978, Ser. No. 898,204
Claims priority, application Israel, Apr. 25, 1977, 51936
Int. Cl.[2] F04B *17/00, 43/06;* F03G *7/02*
U.S. Cl. 417—379 **6 Claims**

1. A heat operated pump comprising:
a boiler containing a driving fluid;
means for heating said driving fluid in said boiler;
condenser means;
a pumping chamber including a flexible partition sealingly disposed in said chamber to define first and second sealingly separated portions;
first inlet means defining a communication passage from the interior of said boiler to said first portion;
first exit means defining a communication passage between said first portion and said condenser means;
second inlet means providing a uni-directional flowpath from a source of fluid to be pumped to said second portion; and
second exit means providing a uni-directional flowpath from said second portion to a fluid utilization location;
said pumping chamber, first exit means and flexible partition



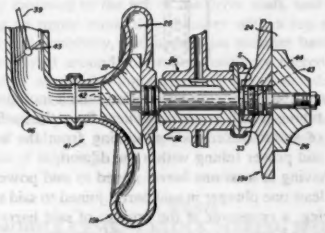
being configured together to define a valve permitting communication between said condenser means and said first portion only when the volume of said first portion exceeds a predetermined volume;
said condenser being maintained at a pressure less than the pressure of said fluid at said second inlet means.

4,207,035

TURBOCHARGER ASSEMBLY

Julius P. Perr, and George L. Muntean, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Dec. 27, 1977, Ser. No. 864,629
Int. Cl.[2] F02B *37/00*
U.S. Cl. 417—407 **5 Claims**



1. A turbocharger assembly comprising a compressor section having a first chamber formed therein, a turbine section having a second chamber formed therein, the latter including an inlet and an outlet, a first passage connecting said second chamber inlet to an exhaust gas source; a second passage connected to said second chamber outlet and extending downstream therefrom; a rotatable shaft having a first portion disposed within said first chamber and a second portion disposed within said second chamber; a first impeller means on said shaft first portion; a second impeller means on said shaft second portion; manually operable valve means disposed within said second passage for braking shaft rotation, said valve means being mounted for adjustment between braking and non-braking modes, when in said braking mode, said valve means substantially closing off said second passage and effecting build-up of a substantial exhaust gas back pressure within said second chamber; a lubricated bearing assembly for said shaft disposed intermediate said compressor and turbine sections; a dynamic first seal encompassing said shaft and disposed intermediate said first chamber and said bearing assembly; a second seal encompassing said shaft and disposed intermediate said second chamber and said bearing assembly; and means communicating with said second chamber and a portion of said first seal spaced longitudinally from said bearing assembly for transmitting the

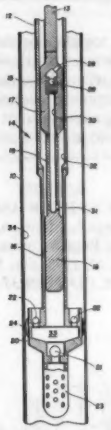
exhaust gas back pressure to said first seal portion and inhibiting migration of lubricant from said bearing assembly to said first chamber when said valve means is in the braking mode.

4,207,036

SUBSURFACE PUMPING INSTALLATION FOR HANDLING VISCOUS OR SAND-LADEN FLUIDS

Walter S. Secrist, Dallas, Tex., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Feb. 16, 1978, Ser. No. 878,205
Int. Cl.[2] F04B *21/00, 39/00*
U.S. Cl. 417—431 **7 Claims**



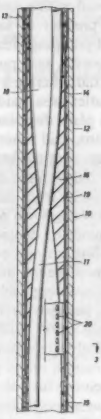
1. In a subsurface pumping installation which includes:
a power tubing which conducts diluent from the surface;
a string of solid sucker rods extending from the surface down said power tubing within the diluent;
a pump having at least one barrel joined to said power tubing, at least one plunger in said barrel joined to said sucker rod string, a crossover at the bottom of said barrel, and standing and discharge valves in said crossover;
means forming a blending chamber inside and pump beneath said plunger; and
means forming a passage in said plunger communicating with said power tubing and with said barrel for delivering diluent to said barrel and thence around said plunger to said chamber;
said plunger on its upstroke drawing well fluid through said standing valve into said chamber where it blends with diluent;
said plunger on its downstroke forcing a mixture of well fluid and diluent from said chamber through said discharge valve;
the improvement comprising:
a casing forming a fluid-conducting annulus which surrounds said power tubing and is concentric therewith; and
a packer between said crossover and said casing closing the bottom of said annulus, said crossover being attached to said barrel;
said discharge valve providing communication between said chamber and said annulus enabling said annulus to receive the mixture of well fluid and diluent and conduct the mixture to the surface out of contact with said plunger and said sucker rods.

4,207,037

STATOR FOR A DOWNHOLE FLUID OPERATED MOTOR AND METHOD OF ASSEMBLING THE SAME

Mathew B. Riordan, Missouri City, Tex., assignor to Eastman Whipstock, inc., Houston, Tex.

Filed Jul. 17, 1978, Ser. No. 925,120
Int. Cl.[2] F04C *1/06, 5/00;* B23P *19/02;* F16L *9/14*
U.S. Cl. 418—48 **7 Claims**



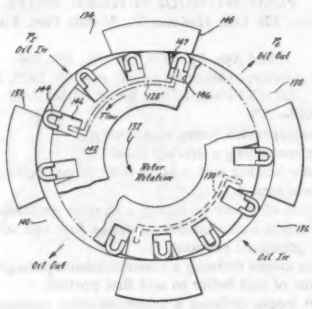
2. A removable section for the stator of a positive displacement multistage motor of the Moineau type comprising a cylindrical body of elastomeric material having a helical opening extending longitudinally therethrough with a pitch equal to double the pitch of the rotor, a cylindrical reinforcing member of rigid material embedded in the body of elastomeric material, and an annular portion of the elastomeric material having an outside diameter greater than the housing in which it is to be placed to cause the annular portion to be compressed between the housing and the reinforcing member to form a fluid seal between the section and the housing and to provide sufficient friction therebetween to hold the section from rotating relative to the housing when fluid is forced through the opening.

4,207,038

POWER STEERING PUMP

Guntis V. Strikis, Belleville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed May 1, 1978, Ser. No. 901,915
Int. Cl.[2] F01C *21/00*
U.S. Cl. 418—75 **3 Claims**



1. A positive displacement pump comprising a pump rotor

and a cam ring surrounding said rotor and having a noncircular inner surface, said rotor and said cam ring defining therebetween crescent shaped pumping cavities, end plates situated on either side of said rotor and said cam ring, said end plates, said cam ring and said rotor being disposed within a pump housing, a plurality of recesses formed in the periphery of said rotor, a pumping element registering with each recess and disposed in sliding engagement with said cam ring, fluid inlet ports and fluid outlet ports communicating with said pumping cavities in arcuately displaced locations one with respect to the other, each pair of pumping elements and the cooperating end plates and cam ring defining a fluid cavity, a first fluid cavity defined by a first pair of said pumping elements and a second fluid cavity defined by a second pair of said pumping elements being disposed at a first angular position of said rotor adjacent an inlet port and an outlet port, respectively, and equalizer pressure passage means formed in said end plates, said equalizer pressure passage means being angularly situated with respect to said ports to establish fluid communication between said first pressure cavity and said second pressure cavity at the angular rotor position at which said first pressure cavity begins to communicate with an outlet port and said second pressure cavity begins to communicate with an inlet port whereby the higher pressure in said second cavity is reduced as the first cavity is prepressurized.

4,207,039

SEAL GRID SYSTEM FOR A ROTARY PISTON MECHANISM

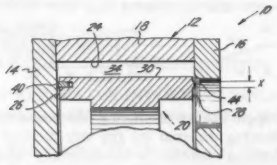
Dankwart Eiermann, Lindau, Fed. Rep. of Germany, assignor to Wankel GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 9, 1978, Ser. No. 932,050

Claims priority, application Fed. Rep. of Germany, Aug. 22, 1977, 2737758

Int. Cl.[2] F01C *1/02, 19/08*

U.S. Cl. 418—77 **4 Claims**



1. In a rotary piston mechanism comprising a rotor having opposite side faces and peripheral surfaces intersecting each other to form apex portions and which rotor is supported for planetary rotation within a housing cavity formed by a peripheral wall and opposite end walls, the rotor and housing walls defining therebetween a plurality of working chambers within which fluids are pressurized, a seal grid system comprising:

(a) an apex seal means for each apex portion to engage the peripheral wall of the housing;

(b) a side seal assembly carried on one side face of the rotor for sealing the interstices between the said one side face and the adjacent end wall of the housing;

(c) said side seal assembly being radially spaced inward of the peripheral surfaces of the rotor so that a portion of said one side face is exposed to the fluid pressures in the working chambers; and

(d) a sealing surface portion forming an integral part of and projecting axially from the other side face of the rotor to engage the adjacent end wall of the housing and extending endlessly around the rotor side face and spaced radially inward of the peripheral surface of the rotor to expose a portion of said other side face to the pressurized fluids in the working chambers so that the axial forces acting on the other side face of the rotor offsets, at least in part, the axial forces acting on the said one side face in the opposite direction.

4,207,040

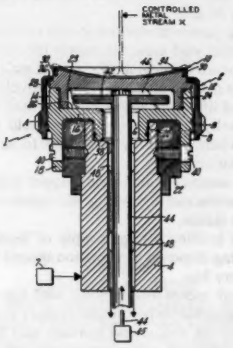
ROTARY ATOMIZATION MEANS FOR THE PRODUCTION OF METAL POWDER

Robert A. Metcalfe, West Palm Beach, and Romeo G. Bourdeau, Tequesta, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 862,898, Dec. 21, 1977. This application Jan. 16, 1979, Ser. No. 4,101

Int. Cl.[2] B01J *2/14*

U.S. Cl. 425—8 **8 Claims**



1. A rotary atomization means for receiving a flow of molten metal on an upper surface for the production of metal powder comprising a drive shaft mounted for rotation, disc means fixedly mounted to the top of the drive shaft, said disc means having an upper metal disc member with a top surface and cylindrical periphery, said upper disc member having a metal ring mounted around the upper periphery thereof, said ring extending above the top surface of said upper disc member forming a recessed center portion, a ceramic layer located in the recessed portion with its outer edge against the inner surface of said ring and its upper surface matching the upper surface of said ring.

4,207,041

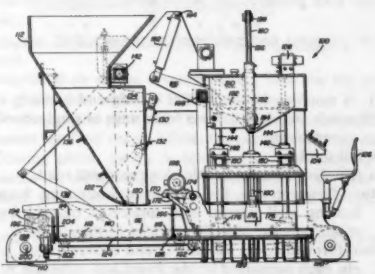
MOBILE CEMENT BLOCK MAKING MACHINE

Theodore G. Kampiziones, Jeffries, La., Florence, S.C. 29501

Filed Aug. 9, 1978, Ser. No. 932,335

Int. Cl.[2] B28B *1/08, 17/00*

U.S. Cl. 425—62 **14 Claims**



1. Apparatus for producing shaped cement products comprising:

a female die means for receiving a fluid cement to form said shaped cement products;

first lifting means for lifting said female die means to a position vertically spaced from the shaped cement products;

a machine body to which said female die means and said lifting means are attached;

motive power means connected to said machine body for moving said machine body to a position horizontally spaced from said formed cement products and including a plurality of wheels attached to said body wherein at least one of said wheels has a motor attached thereto for providing power for motion of said body;

control means for maintaining said female die in said vertically spaced position while said motive power means is operative to move said machine body;

male die means for positioning in said female die means to compress and form the liquid cement to the shape of the female die means;

second lifting means connected to said body and operatively engaged with said male die means for imparting upward and downward vertical motion to the male die means; and wherein said control means is operatively engaged with said second lifting means to maintain said male die means in a vertically spaced position from said formed cement product when said body is moved to said horizontally spaced position;

delivery bin means for delivering liquid cement to said female die means and depositing said liquid cement into said female die means;

a hopper for holding a large supply of liquid cement, said hopper being disposed in a position spaced vertically from said delivery bin;

bin movement means for moving said bin means from a position immediately below said hopper to a position over said female die means and moving said bin means to a position horizontally spaced from said female die means to a position immediately below said hopper when said female die means is filled with cement; and wherein said control means is operative to control said bin movement means to insure that said bin means is in a position horizontally spaced from said female die means when either of said first or second lifting means is actuated;

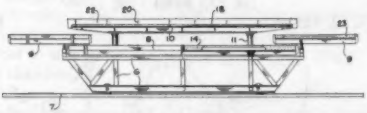
vibrating means operatively engaged with said female die means to impart vibratory motion thereto.

4,207,042

CASTING AND ERECTING MACHINE

Mikhail Linetsky, #94-276 Adsum Dr., Winnipeg, Manitoba, Canada (R2P 0W2)

Filed Jan. 29, 1979, Ser. No. 7,653
Int. Cl.[2] B28B *1/00*
U.S. Cl. 425—62 **2 Claims**



1. A machine for horizontal casting and erecting concrete wall panels and slabs to form room units or single-storey buildings, comprising:

a rail-track;

a wheeled frame, movable along said rail-track;

two form-erectors for casting and erecting longitudinal bearing wall panels, each supported by said frame and rotatable more than 90° parallel to the rail-track;

two form-strippers for casting and erecting cross wall panels, each supported by the frame and rotatable 90° across the rail-track; the length of each form-stripper without edges and of a cross panel is less than the clear distance between installed longitudinal wall panels;

a lifting mould with a low solid sloped edges for casting thin slabs with reinforcing cages; said mould is supported by said frame through two jacks; the width of said mould is less than the clear distance between installed longitudinal bearing wall panels and the length of said cages;

a detachable edge on each form-erector, which would have become the top edge after rotating; said edge has an angle profile, one side of which is a continuation of a pan, and creates a room for the stripped lifting mould;

two brackets on each form-erector, which replace said edge; said brackets are fixed with loops of the wall panel and hold it during erecting;

a hinged lock bracket on each form-stripper; said bracket replaces an edge, which would have become the bottom edge after rotating, and releases the panel to be fixed to the previously installed longitudinal wall panels.

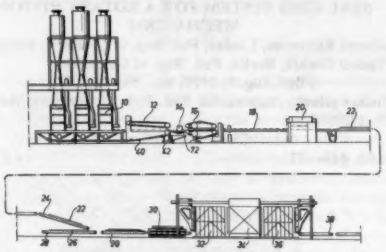
a technological cycle, starting from erecting a cross wall panel on an incomplete room unit or a building and continuing on the opposite side of the rail-track.

4,207,043

APPARATUS FOR PRODUCING FIBERBOARD ACCORDING TO THE DRY METHOD

Willard Falkinger, Farsta, Sweden, assignor to Defibrator Fiberboard AB, Stockholm, Sweden

Filed Jun. 22, 1977, Ser. No. 809,076
Claims priority, application Sweden, Jul. 5, 1976, 7607693
Int. Cl.[2] B30B *5/06*
U.S. Cl. 425—85 **9 Claims**



1. In an apparatus for producing fiberboard and the like from fibrous sheeting material by the dry method in which the fibrous sheeting material is continuously advanced from a forming station while supported on a perforated endless belt to a pressing station where it is compressed to desired thickness and compactness preliminary to being further advanced to a cutting station for subdivision into board units, the improvement comprising:

(a) an air evacuation station located between said forming station and said pressing station;

(b) suction means located beneath said endless perforated belt for evacuating air from said fibrous sheeting material; and

(c) compression means in said air evacuating station effective to preliminarily compress said fibrous sheeting material simultaneously with the air evacuation therefrom by said suction means without disturbing the fiber orientation therein but sufficient to render it self-supporting while being advanced to said pressing station.

4,207,044

APPARATUS FOR AUTOMATICALLY CUTTING AND FEEDING WAFER BISCUITS AND LIKE PRODUCTS TO MOVABLE MOULDS

Vincenzo Lionello, Quinto Stampi Rozzano, Italy, assignor to Carle & Montanari S.p.A., Milan, Italy

Filed Apr. 21, 1978, Ser. No. 898,765
Int. Cl.[2] B29C *17/10*; A23G *3/20*
U.S. Cl. 425—126 R **16 Claims**

1. An apparatus for automatically cutting and feeding wafer

biscuits and like products to moulds advanced in at least one row on a conveyor, the apparatus comprising

(A) a stationary chute arranged above and sloping toward said conveyor,

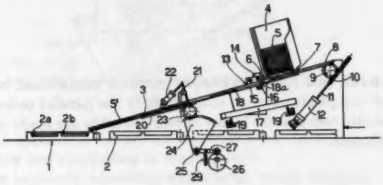
(i) said chute having a lower end proximate to said conveyor and

(ii) an upper end spaced from said conveyor,

(B) at least one hopper arranged adjacent said upper end of said chute for receiving a stack of wafer slabs,

(i) said at least one hopper having a lower front opening at one side facing said chute and a lower rear opening at one side opposite said chute,

(ii) said front opening having a size substantially corresponding to the thickness and length of each of said wafer slabs,



(C) pusher means reciprocable through said lower rear opening for pushing a lower wafer slab of said stack of wafer slabs through said lower front opening,

(D) stationary cutting blades in front of said lower front opening and parallel to said chute for cutting said wafer slabs pushed by said pusher means into wafer strips,

(E) advancing means between said cutting means and said lower end of said chute for advancing said wafter strips along said chute toward said lower end into said moulds, and

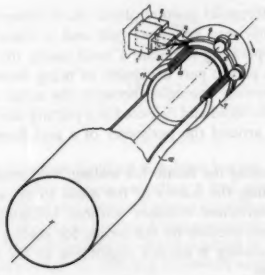
(F) means for reciprocably operating said advancing means in synchronism with said moulds on said conveyor and said pusher means.

4,207,045

EXTRUSION APPARATUS INVOLVING ROTATIONS

Ole-Bendt Rasmussen, 14, Anemonevej, 2820 Gentofte, Denmark

Division of Ser. No. 639,006, Dec. 9, 1975, Pat. No. 4,115,502.
This application Aug. 21, 1978, Ser. No. 934,721
Claims priority, application United Kingdom, Dec. 10, 1974, 53267/74
Int. Cl.[2] B29F *3/10*
U.S. Cl. 425—133.1 **10 Claims**



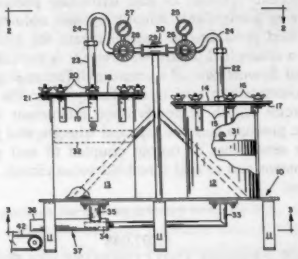
1. An apparatus for extruding a continuous or discontinuous tubular sheet of an extrudable plastic material which comprises (a) a rotatable extrusion die having on its exterior at least one generally continuous circular inlet channel, a continuous or discontinuous annular extrusion orifice at one end of said die spaced from and coaxial with said channel, and a continuous or discontinuous annular passage inside said die communicating between the bottom of each such channel and said orifice; (b) means for rotating said die and channel about its axis; (c) means for delivering to at least one point on the path of said channel at least one pressure free flowable stream of said extrudable material to lay a ribbon of material within said channel; (d) means associated with said channel and operative upon rotation of said die to apply pressure against the material laid in said channel downstream of the point of delivery to advance the material through the communicating passage and out of said die orifice; and (e) means for collecting the thus extruded film.

4,207,046

TAMALE MACHINE

Joe C. Ayala, 4307 S. Flores, San Antonio, Tex. 78214, and Caesar C. Ayala, 1746 McKinley, San Antonio, Tex. 78210

Filed Dec. 6, 1978, Ser. No. 966,808
Int. Cl.[2] A21C *11/18*
U.S. Cl. 425—133.1 **8 Claims**



1. A tamale filler disperser comprising:

a. an elongated base upon which is supported,

b. a first tank capable of receiving and retaining food ingredients,

c. a second tank capable of receiving and retaining masa dough,

d. compressed air means communicating with the top portion of said first tank and said second tank,

e. a floating piston positioned in said first tank adapted to separate the food content from the compressed air,

f. a floating piston means in said second tank adapted to separate the masa dough and the compressed air, and

g. a small tank discharge conduit secured in the bottom of said first tank,

h. a large tank discharge conuit secured in the bottom of said second tank,

i. said small tank discharge conduit being of a diameter less than said large tank discharge conduit, and small tank discharge conduit projecting into said large tank discharge conduit, the combination forming an encasing nozzle.

4,207,047

METHOD OF GENERATING PRESSURE IN A PRESS AND CIRCUIT FOR CARRYING OUT THE METHOD

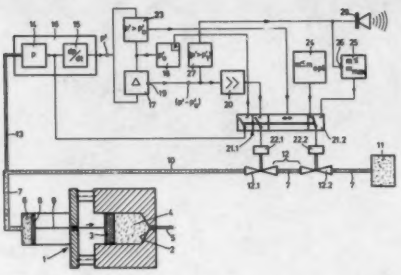
Dieter Kolb, Stuttgart; Eugen Kopp, Stuttgart-Neugereut, and Manfred Müller-Sybrichs, Schöckingen, all of Fed. Rep. of Germany, assignors to Werner & Pfleiderer, Stuttgart, Fed. Rep. of Germany

Filed Jun. 7, 1978, Ser. No. 913,381

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1977, 2725804

Int. Cl.² B29C *3/06*

U.S. Cl. 425—146 9 Claims



1. In a circuit for effecting a two-phase pressure buildup in a cylinder of an extrusion press which includes a source of hydraulic fluid, a hydraulic cylinder and an extruding piston in the cylinder, the improvement, comprising a hydraulic fluid volume sensor, a pressure rise control means for hydraulic fluid and a hydraulic pressure rise set value sensor, wherein at least one value means is incorporated in a hydraulic feed line to said hydraulic cylinder of said extruding piston, said valve means being controllable initially by said volume sensor and then by said pressure-rise control means for hydraulic fluid, wherein a controlled controller-reverser is provided, which is connected downstream of a pressure-differential quotient converter connected to said hydraulic cylinder via a threshold value circuit which responds upon attainment of a desired hydraulic pressure increase rate and wherein said pressure rise set value sensor has its output coupled to said pressure-rise control means and to said threshold value circuit, as a threshold sensor.

4,207,048

POWER PRESSES AND COMPONENTS FOR SUCH PRESSES

Eric W. Seymour, Farleigh, Claremont La., Esher, Surrey, England

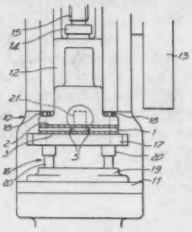
Filed Dec. 26, 1978, Ser. No. 973,291

Claims priority, application United Kingdom, Jan. 5, 1978, 369/78

Int. Cl.² B30B *15/00*

U.S. Cl. 425—151 7 Claims

1. In a power press of the kind having a press bed, a ram mounted for movement towards and away from said press bed, means for driving said ram towards and away from said press bed, a tool mounted between said ram and said press bed whereby, in operation, a work piece is deformed by said tool when said ram is driven towards said press bed, said movement of said ram towards said press bed defining a press stroke, and a jam release assembly mounted in said press, said assembly comprising a layer of heat softenable rigid plastics material located so that the direction of said press stroke is substantially normal to said layer and so that during the pressing operation said layer is subjected to compressive stress in said direction of said press stroke, and electrical heating means which is capable of heating said layer of plastics material to a temperature sufficient for said plastics material to soften whereby, under compression in said direction of said press stroke as a result of a jam, the thickness of said plastics layer decreases to release said jam, the improvement wherein: said jam release assembly includes an additional layer of heat softenable rigid plastics



material, said electrical heating means is sandwiched between said two plastics layers, said assembly has parallel outer faces, and said two plastics layers of said assembly are made of polycarbonate.

4,207,049

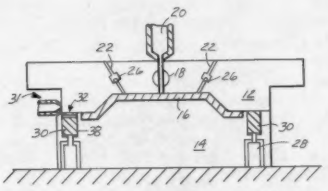
DEVICE FOR MOLD COATING PLASTIC PARTS

Richard J. Malo, 26100 Little Mack, St. Clair Shores, Mich. 48081, and Charles Malo, 36510 Birwood, Mt. Clemens, Mich. 48043

Filed Feb. 16, 1979, Ser. No. 12,845

Int. Cl.² B29F *1/10*

U.S. Cl. 425—129 R 6 Claims



1. A device for mold coating plastic parts comprising:

A mold comprising an upper half and a lower half, the halves cooperating to define a mold cavity therebetween in which a plastic part is capable of being formed;

a means for sealing extending between the upper and lower halves of the mold and disposed at a parting line formed in the cavity around the perimeter of a part formed in the mold;

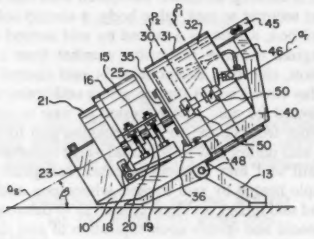
means for moving the means for sealing, the means for sealing permitting the halves of the mold to be separated a first predetermined distance without breaking the seal therebetween created by the means for sealing when the means for sealing is moved responsive to the means for moving, and

means for injecting a measured amount of a coating material into a remaining part of the mold cavity created between a part formed in the cavity and one of the mold halves when the mold halves are separated a second predetermined distance contemporaneous with the movement of the means for sealing.

4,207,050
MULTIPLE DEPTH PELLETIZER

William H. Engelleitner, Coraopolis, Pa., assignor to Mars Mineral Corporation, Valencia, Pa.

Filed Sep. 5, 1978, Ser. No. 939,842
Int. Cl.[2] B01J 2/24, 2/12
U.S. Cl. 425—183 5 Claims



1. An apparatus for pelletizing particulate materials in a pelletizing bed comprising in combination

a base angularly adjustable with respect to the horizon,

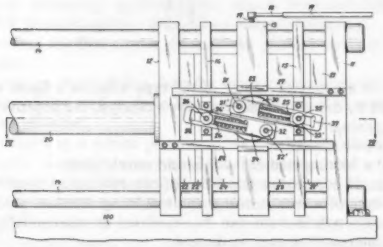
a pelletizing drum having an opened end and a closed end and a sidewall, said closed end secured to a shaft journaled to said base, said closed end being planar and perpendicular to the axis of said shaft, said sidewall comprising a surface of revolution having an axis coaxial with the axis of the shaft defining the rotating axis of the vessel, said sidewall being comprised of at least two separable sections which sections abut on a plane parallel to the closed end, and

means for releasably securing the sidewall sections together.

4,207,051
STRIPPER MECHANISM FOR INJECTION MOLD

John B. Wright, Bolton, and Robert D. Schad, Schomberg, both of Canada, assignors to Husky Injection Molding Systems Limited, Bolton, Canada

Filed Jan. 11, 1979, Ser. No. 2,735
Int. Cl.[2] B29C 7/00; B29F 1/14
U.S. Cl. 425—556 10 Claims



1. In an injection-molding machine having a plurality of relatively movable platens including a first platen carrying a first mold portion and a second platen carrying a second mold portion, said first mold portion being provided with a projecting core receivable in a mold-closed position in a recess of said second mold portion for defining therewith an injection cavity,

the combination therewith of a stripper plate penetrated by said core sandwiched between said first and second mold portions in said mold-closed position and mechanism for detaching said stripper plate from both said mold portions upon displacement of said platens into a mold-open position to disengage a molded workpiece from said core, said mechanism comprising:

a rack secured to said first platen and extending past said second platen in said mold-closed position;

a pinion rotatably journaled on said second platen in mesh with said rack;

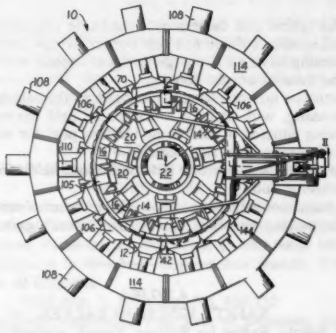
resilient means urging said stripper plate into contact with said first mold portion at the beginning of a mold-opening stroke; and

a link articulated at an eccentric location to said pinion and joined to said first platen by a lost-motion connection enabling limited separation of said stripper plate from said second mold portion whereby said stripper plate maintains contact with said first mold portion under the urging of said resilient means in an initial phase of said mold-opening stroke, said link coming into positive engagement with said stripper plate for breaking said contact at the end of said initial phase.

4,207,052
CURING MOLD FOR CURING REPLACEABLE TREAD AND TRACK BELTS

Ronald L. Satzler, Princeville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 895,887, Apr. 13, 1978, abandoned, which is a continuation of Ser. No. 705,843, Jul. 16, 1976, abandoned. This application Feb. 16, 1979, Ser. No. 13,356
Int. Cl.[2] B29D 29/00; B29C 5/00
U.S. Cl. 425—394 8 Claims



1. In an apparatus for curing a tread or track belt, said apparatus having a plurality of inner segments movable between a first position at which the inner segments fit together to form a substantially inner cylindrical mold face surface and a second position at which the inner segments are moved radially inwardly toward a longitudinal axis of said cylindrical mold face surface, said plurality of inner segments including a first set of inner segments alternatively placed between the segments of a second set of inner segments, the improvement comprising:

means for moving the segments of the first set of inner segments between the first and second positions;

means for moving the segments of the second set of inner segments between the first and second position in response to movement of the segments of the first set of inner segments;

a plurality of outer segments movable between a first position at which the outer segments fit together to form a second mold face surface and a second position at which the outer segments are moved radially outwardly;

means for moving the outer segments between the first and second positions;

a seal ring movable between a first position at which said seal ring is in sealing contact with the ends of the inner and outer segments at the first position of the inner and outer segments and a second position at which said seal ring is positioned intermediate the ends of the inner and outer

segments at the second position of said inner and outer segments; and

means for moving the seal ring between said first and second positions.

4,207,053

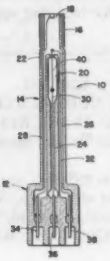
IGNITER AND FLAME SENSOR ASSEMBLY FOR GAS BURNING APPLIANCE

Jesse H. Turner, and Charles L. Kaduk, both of Auburn, Ind., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Aug. 18, 1978, Ser. No. 935,039

Int. Cl.[2] F23Q *9/08*

U.S. Cl. 431—59 **8 Claims**



1. An igniter and flame sensor electrode assembly for igniting and sensing a flame at a fuel burner, which comprises:

a housing having a flame ignition port therein extending into the interior of said housing;

a resistive igniter element mounted in the interior of said housing, with at least a portion of said igniter element being situated in said flame ignition port for exposure to fuel issuing from said burner;

a flame sensing electrode mounted upon the exterior of said housing; and

electrical connection means in the interior of said housing for making electrical connections to said igniter element and flame sensing electrode.

4,207,054

SAFETY IGNITION VALVES

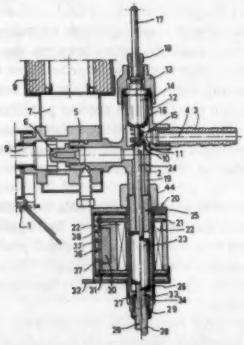
Pierre Sobole, Ruffey les Echirey, France, assignor to Societe Bourguignonne de Mecanique, France

Filed Dec. 5, 1977, Ser. No. 857,756

Claims priority, application France, Dec. 7, 1976, 76 36750

Int. Cl.[2] F23M *5/00*; H01M *4/84*

U.S. Cl. 431—69 **8 Claims**



1. A safety ignition valve for a pilotless burner comprising a valve body having an inlet for connection to a fuel supply, an outlet for connection to the burner and a valve seat between said inlet and outlet, a valve member movable between a closed position on said valve seat and an open position, means constantly biasing said valve member toward closed position, a first solenoid acting on said valve member to retain it in open position against the action of said bias, said first solenoid being energized by current produced by a thermocouple heated by said burner to retain said valve member in open position when said burner is burning, an igniter associated with said burner, a control box secured to said valve body, a second solenoid in said control box, a plunger actuated by said second solenoid when energized to move said valve member from closed to open position, electrical components in said control box including delay circuit means for energizing said igniter and said second solenoid for only a short period of time to move said valve member from closed to open position and to continue energizing said igniter and to hold said valve member in open position until said first solenoid is either energized by said thermocouple heated by said burner, whereupon said second solenoid and said igniter are deenergized, or to deenergize said second solenoid and igniter upon expiration of said short period of time in the event said burner fails to ignite, and a manually operable push button extending outside said control box and acting on said valve member through said plunger to move said valve member from closed to open position.

4,207,055

CIGARETTE LIGHTER WITH SYNERGISTIC IGNITING MEANS

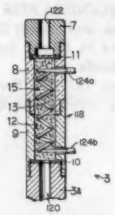
Noboru Tanaka, Tokyo, Japan, assignor to Tokyo Pipe Co., Ltd., Tokyo, Japan

Filed Dec. 5, 1977, Ser. No. 857,245

Claims priority, application Japan, Feb. 1, 1977, 52/9966; Feb. 2, 1977, 52/10547

Int. Cl.[2] F23Q *2/16*

U.S. Cl. 431—258 **5 Claims**



1. In a cigarette lighter of the type wherein a flame is obtained by drawing a fuel gas over a catalyst, the improvement comprising:

(a) a nozzle stem;

(b) a heating element within said nozzle stem;

(c) said nozzle stem consisting of two cylindrical fitted members of a heat-resisting and insulating material whereby said nozzle stem can be separated at substantially the intermediate portion thereof;

(d) a nozzle tip fitted into the upper-end portion of said nozzle stem;

(e) a fuel tube fitted into the lower end portion of said nozzle stem;

(f) said catalyst is disposed in said nozzle stem, said catalyst being adapted to receive heated fuel gas from said heating element;

(g) a lever having two ends;

(h) one end of said lever secured at one end portion of said nozzle stem, movement of said lever adapted to move said nozzle stem and enable the ejecting of said fuel;

(i) a control button slidingly affixed to an outer surface of a sidewall of said cigarette lighter;

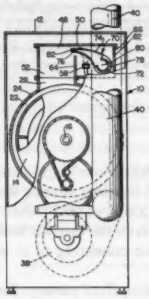
(j) the other end of said lever is attached to said control button;
(k) a power switch for controlling said heating element; and
(l) a power switch actuator operatively connected to said control button, said power switch actuator being adapted to close said power switch whereby said heating element commences heating.

4,207,056

METHOD AND APPARATUS FOR IMPROVING THE FUEL EFFICIENCY OF A LAUNDRY DRYER

Robert J. Bowley, 124c R.D. 5 Tuckhoe Rd., Williamstown, N.J. 08094

Filed Nov. 6, 1978, Ser. No. 957,924
Int. Cl.² F27D 1/00; F27B 7/36
U.S. Cl. 432—3 **2 Claims**



1. A method of improving the fuel efficiency of a laundry dryer of the type having a combustion chamber wherein first and second burners are located laterally adjacent one another in a path of airflow from an ambient makeup air inlet adjacent and upstream from the first burner to a drying chamber inlet adjacent and downstream from the second burner, and having a blower exhausting moisture-laden airflow from the drying chamber to an exhausting duct, comprising the steps of:
removing the first burner adjacent the ambient air makeup inlet:
installing a recirculation duct for recirculating a portion of the exhaust airflow from the exhaust duct to the combustion chamber;
and installing a reheat plenum in the combustion chamber space vacated by removal of the first burner, said reheat plenum being fabricated of walls independent of the combustion chamber and having an inlet portion of relatively large cross sectional flow area located laterally adjacent the second burner and communicating with the recirculating duct to receive exhaust airflow at relatively low velocity at a point laterally adjacent and away from high temperature heat exchange relation with the second burner, said reheat plenum having an angularly inclined lower heat exchange surface overlying the second burner in high temperature heat exchange and flame deflecting proximity therewith to heat the recirculating exhaust airflow within the reheat plenum and deflect the ambient makeup airflow across the second burner, and said plenum having a relatively smaller cross section discharge opening for injecting the reheated recirculated exhaust airflow into the flow of heated makeup air at relatively higher velocity.

4,207,057

FIXING DEVICE FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINE

Shinichi Tsuda; Yoshio Nakajo; Kenkichi Tagawa; Hayami Hirai, and Shunji Takagi, all of Ebina, Japan, assignors to Rank Xerox, Ltd., London, England

Filed May 25, 1976, Ser. No. 689,767
Claims priority, application Japan, Jun. 16, 1975, 50-80563[U]
Int. Cl.² F27B 9/28
U.S. Cl. 432—59 **4 Claims**

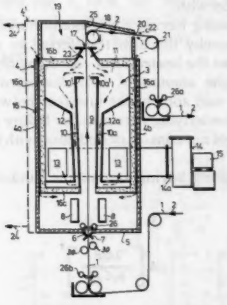
1. Contact fuser apparatus for fixing toner images to support material, said apparatus comprising:
a heated roll structure;
a pressure roll structure forming a nip with said heated roll structure through which said support material passes with the toner images contacting said heated roll structure;
means for stripping said support material from said heater roll structure after said material passes out of said nip; and
means interposed between said nip and said stripping means for maintaining the drying effect of the heated fuser roll structure on the support material constant thereby minimizing curling of said support material.

4,207,058

APPARATUS FOR DRYING A CONTINUOUSLY MOVING WEB

Gerhard Petersohn, Tiefenbronn; Hans-Ulrich von der Eltz, Frankfurt am Main; Walter Birke, Frankfurt am Main, and Franz Schon, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Bruckner Apparatebau GmbH, Erbach, Fed. Rep. of Germany

Filed Aug. 2, 1978, Ser. No. 930,132
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1977, 2735075
Int. Cl.² F27B 9/28
U.S. Cl. 432—59 **23 Claims**



1. In apparatus for drying a web in which a combustible organic substance is entrained and which moves continuously through a walled chamber having web inlet and web outlet openings, heating means adjacent the web inlet opening for combusting said substance, said chamber having combustion

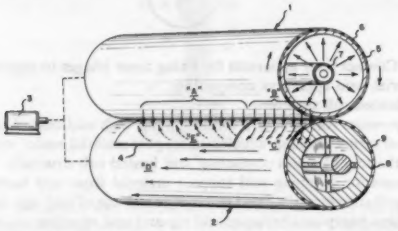
air entry means and hot waste gas exit means, the improvement comprising heat radiating means spaced from each other and supported within said chamber on opposite sides of said web to form a passage for said web with one side of each of said radiating means confronting said web; and means for directing said hot waste gas first through said passage and then along the opposite side of each of said radiating means as said waste gas moves toward said exit means, whereby said heat radiating means are heated in part on opposite sides by said waste gas.

4,207,059

BACKUP ROLL FOR HEATED FUSER SYSTEM

Ronald E. Gaitten, Boulder; Paul D. Jachimiak, Lafayette; James A. Machmer, Boulder, all of Colo., and Alvin L. Wittwer, Paris, Ky., assignors to International Business Machines Corporation, Armond, N.Y.

Filed Dec. 11, 1975, Ser. No. 639,824
Int. Cl.[2] G03G *13/20*; H05B *1/00*
U.S. Cl. 432—60 **12 Claims**



1. In a heated fuser system for fusing images on copy sheets and including a fuser roll couple having a heated fuser roll and a backup roll disposed in pressure contact therewith to form a nip for receiving copy sheets fed therebetween with the sheets leaving a portion of the backup roll in direct nip contact with the heated fuser roll, and means for rotating said rolls in direct nip contact with each other whereby at any point in time the direct nip contact is defined by the engagement of the fuser roll with a zone on the backup roll of finite area, an improved backup roll comprising:

(a) a core member constructed of heat conductive material; and

(b) a heat insulative coating on the surface of the core member in the area of direct contact with the heated fuser roll,

(1) said coating having heat transfer characteristics whereby heat is transferred from the heated fuser roll to the coating during direct nip contact of each successive zone therewith,

(2) said coating having a maximum thickness of about 4.5 mils whereby the heat transferred to each successive zone from the heated fuser roll duing direct nip contact is, less the amount of heat dissipated to air, passed through said zone to the interface between the coating and the underlying core member before the next successive direct nip contact of said zone with the heated fuser roll,

(3) said coating having a minimum thickness about equal to

$$1.5\left[\frac{2k_c\theta}{\rho_c C_{pc}}\right]^{\frac{1}{2}}$$

where:

k=thermal conductivity BTU/(hr) (ft) (°F.)

sub c=backup roll coating

θ=nip resistance time in hours of each successive zone of contact of fuser roll with coating on backup roll or paper

ρ=density lb/ft^3

C_p=specific heat BTU/(lb) (°F.), and

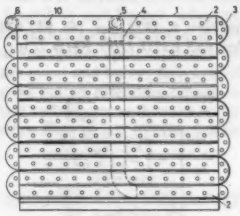
(4) said core member having heat transfer characteristics whereby the heat passed through each successive zone to the interface of the coating and the core member is absorbed by the core member before that zone again moves into direct nip contact.

4,207,060

VESSEL FOR METAL SMELTING FURNACE

Ludger Zangs, Essen, Fed. Rep. of Germany, assignor to DEMAG, Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 26, 1978, Ser. No. 918,942
Claims priority, application Fed. Rep. of Germany, Oct. 11, 1977, 2745622
Int. Cl.[2] F27D *15/02*
U.S. Cl. 432—77 **19 Claims**



1. A vessel for a metal smelting furnace having a smelting zone including a heat-resistant interior wall, and cooling means for protecting the interior of said vessel, characterized by

(a) at least a portion of the interior wall of said vessel above the smelting zone consisting of at least one cooling pipe coil;

(b) said coil including fluid passage-forming sections;

(c) said cooling pipe coil being exposed to the center of the vessel, and

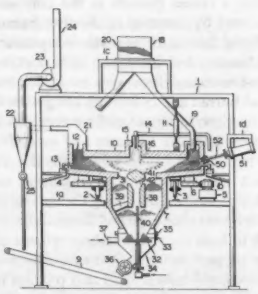
(d) neighboring sections of said coil being arranged in a contacting relation.

4,207,061

TOP-SHAPED LIME KILN

Toshio Ikenaga, 1-4-5, Miyoshi-cho, Kitami-shi, Hokkaido, and Tatsu Chisaki, 2-30-9, Shimouma, Setagaya-ku, Tokyo, both of Japan

Filed Oct. 20, 1978, Ser. No. 952,945
Claims priority, application Japan, Oct. 21, 1977, 52-126485
Int. Cl.[2] F27D *1/08*
U.S. Cl. 432—98 **9 Claims**



1. In a top-shaped lime kiln comprising a rotatable platter-

shaped kiln bed (4) having a central opening; a cylindrical calcined lime cooling chamber (7) extending downwardly from said central opening of said kiln bed (4); a stationary coaxial round lid (10) over said bed and having a central opening; a fuel combustion chamber (15) extending upwardly from said central opening of said lid (10); said bed (4) and lid (10) having peripheral walls, an annular gap (12) being defined between said peripheral walls of said bed and lid; raw limestone granules feeding chutes (19) opening and feeding into said annular gap (12) defined between said peripheral walls of said bed and lid; and an effluent gas collecting chamber (21) which covers said annular gap (12) and which is connected to an annular gas leakage preventing device (13);

the improvement wherein:

a hot gas recirculating device is coupled in the upper section of said cylindrical calcined lime cooling chamber (7), said hot gas recirculating device comprising a substantially vertically arranged gas-passing cylinder (38) mounted in said cooling chamber (7); an air ejecting nozzle tube (40) extending into said cooling chamber (7) from below said chamber (7) and cylinder (38) and opened to the lower end of said gas-passing cylinder (38); and a gas baffle coronet (41) disposed above said gas-passing cylinder (38);

at least one of said kiln bed (4) and lid (10) has a plurality of holes formed in the peripheral wall thereof;

a plurality of sealing boxes (50) are affixed to said wall surrounding said holes; and

a plurality of automatically reciprocating pushing rods (52) are provided for insertion into a limestone granules layer spread on the kiln bed (4) through said sealing boxes (50) and through said plurality of holes formed in the peripheral wall of at least one of said kiln bed (4) and lid (10) to push calcined lime from said kiln bed (4) into said cylindrical calcined lime cooling chamber (7).

4,207,062

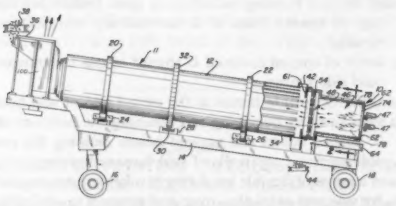
HEATING AND MIXING APPARATUS FOR ASPHALTIC PAVEMENT

Frank F. Moench, and Lawrence R. Moench, both of P.O. Box 6484, Albuquerque, N. Mex. 87107

Filed May 26, 1978, Ser. No. 909,916

Int. Cl.[2] F27B 3/06

U.S. Cl. 432—111 **23 Claims**



1. Heating apparatus for use in combination with a drum mixer suitable for mixing asphalt aggregate materials and the like, said heating apparatus comprising:

a heat source; and

a combustion chamber in which hot gases are produced by heat from said heat source, said combustion chamber having structural means including a layer of refractory material cast on a metal support plate and on a plurality of fasteners attached to said support plate with an array of gas distributing ports through which hot gases in the combustion chamber are discharged whereby to direct a plurality of streams of hot gases into a drum mixer to heat materials being mixed therein.

4,207,063

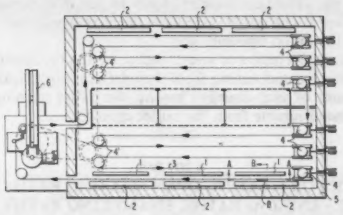
APPARATUS FOR MOLDING HOLLOW OBJECTS OF THERMOPLASTIC RESINS

Yasunori Sugita, Tokyo, and Yokichi Miyara, Yokohama, both of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Division of Ser. No. 759,547, Jan. 14, 1977, abandoned, which is a continuation of Ser. No. 557,985, Mar. 13, 1975, abandoned. This application Aug. 3, 1978, Ser. No. 930,653

Int. Cl.[2] F27D 3/00; F27B 9/14

U.S. Cl. 432—124 **5 Claims**



1. Apparatus for heating tubular parison having walls of substantially uniform thickness comprising:

(a) a furnace provided with a source of hot air to heat said parison to a predetermined uniform temperature;

(b) conveyor means for transporting tubular parisons along a circuitous path in said furnace;

(c) said conveyor means including a series of support means for holding each of said parisons in vertical positions for rotation about their respective central axes while being transported along said path, the next to last pass and the last pass in said path being in parallel spaced relationship;

(d) said furnace also including horizontally extending narrow infra red heating means disposed parallel to and between the length of said next to last and last passes of said circuitous path for heating an axially subdivided portion of a parison to a temperature different from that of the remainder of the parison while moving along said passes;

(e) and means for rotating a support means for a parison while exposed to said auxiliary heating means.

4,207,064

HEATING APPARATUS

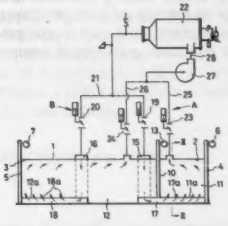
Toru Taniguchi, Kyoto, Japan, assignor to Nikku Industry Co., Ltd., Hyogo, Japan

Filed Feb. 6, 1978, Ser. No. 875,375

Claims priority, application Japan, Jul. 18, 1977, 52-85927

Int. Cl.[2] F27B 9/00

U.S. Cl. 432—145 **3 Claims**



1. A heating apparatus comprising

a furnace body having an inlet opening with a first door covering said inlet opening, an outlet opening with a second door covering said outlet opening, and at least one

partition door disposed between said inlet and outlet openings, said doors dividing said furnace body into at least two independent chambers, each of said independent chambers having hot air director means on the bottom thereof and air outlet means at the top thereof,

wherein the hot air director means of the chamber having said inlet opening directs hot air towards the inlet opening, the hot air director means of the chamber having said outlet opening directs hot air towards the outlet opening, and the hot air director means of the others of said at least three chambers directs hot air towards said inlet opening in the chambers located closer to the inlet opening and towards said outlet opening in the chambers located closer to the outlet opening, and

the air outlet means of said chamber having the inlet opening being located remote from the inlet opening, the air outlet means of said chamber having the outlet opening being located remote from the outlet opening.

4,207,065

DEVICE FOR HEATING OPEN MELTING BATHS, SUCH AS GALVANIZING BATHS, ENAMELING BATHS, LEAD COATING BATHS, METALLIC BATHS, GLASS BATHS, AND THE LIKE

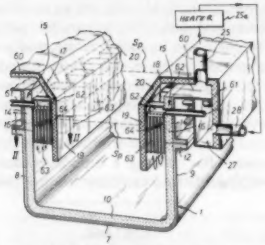
Werner Ackermann, Siegen-Trupbach, and Frohmut Vollhardt, Siegen-Bürbach, both of Fed. Rep. of Germany, assignors to SAG Siegener AG, Siegen-Geisweid, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,167

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1978, 2817006

Int. Cl.[2] F27B *3/00*; F26B *3/00*

U.S. Cl. 432—195 **16 Claims**



1. A device for heating open melting baths, especially galvanizing baths, enameling baths, lead coating baths, metal baths, and glass baths, which comprises:

a container having walls and adapted to receive a melting bath;

warm gas receiving means arranged at least partially within said container for communication therewith;

first conduit means leading into said warm gas receiving means for conveying an inert gas thereto;

means for communicating said warm gas receiving means with said container, said means comprising at least one ceramic block each including passage means for communicating said warm gas receiving means with said container;

a heater in communication with said first conduit means;

cooled gas collecting means also arranged partially within said container for receiving cooled gas from said container; and

second conduit means for communicating said cooled gas collecting means with said heater.

4,207,066

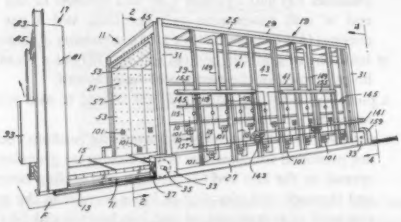
RETRACTABLE GANTRY HEAT TREAT FURNACE

John F. Weldon, Birmingham, Mich., assignor to Fire Rite, Inc., Detroit, Mich.

Filed Sep. 25, 1978, Ser. No. 945,763

Int. Cl.[2] F24J *3/00*

U.S. Cl. 432—225 **23 Claims**



1. A retractable gantry heat treat furnace comprising an elongated refractory bed mounted upon a floor for supporting metal parts for heat treatment;

a pair of spaced parallel tracks mounted upon the floor upon opposite sides of said bed, and extending longitudinally outward of one end thereof;

an upright bulkhead upon said floor at the other end of said bed transversely thereof;

an upright furnace housing having a closed end and an open end, movably mounted upon said tracks, having a retracted load position outwardly of said bed, and movable to a closed position over and enclosing said bed and sealed against said bulkhead;

said furnace housing including an open framework consisting of spaced pairs of horizontal top and bottom side beams;

a series of spaced inverted U-shaped beams interconnecting said side beams;

a series of upright beams at the closed end of said housing;

a steel sheeting overlying and spanning the interiors of said U-shaped beams and upright beams defining the interior side, end and top walls of said furnace housing;

and a series of flexible insulating blanket strips arranged side by side and extending over and secured to said side, end and top walls.

CHEMICAL

4,207,067

TRANSFER DYE

Carl Becker, Basel, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

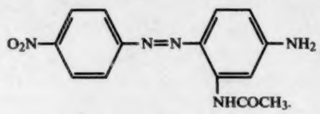
Filed Jun. 1, 1978, Ser. No. 911,957

Claims priority, application Switzerland, Jun. 8, 1977, 7048/77

Int. Cl.[2] C09D *11/02*

U.S. Cl. 8—470 **2 Claims**

1. In the method for the dry transfer printing of textile material which comprises contacting the material to be printed with the printed side of a printed transfer carrier support and subjecting the carrier support to heating while in contact with the said material to effect transfer of dye-stuff from the carrier support to the said material, the improvement according to which the printed transfer carrier support carries a print comprising a dyestuff of the formula



4,207,068

PROCESS FOR PRODUCING CHAMBRAY AND OTHER DYED FABRICS THROUGH PHOSPHORYLATION

Eugene J. Blanchard, New Orleans; Joseph S. Bruno, Chalmette, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Oct. 16, 1978, Ser. No. 951,539

Int. Cl.[2] D06M *1/18;* **D06P** *3/60*

U.S. Cl. 8—493 **10 Claims**

1. A process for producing dyed fabrics with color and shade differential by piece dyeing phosphorylated fabric, said process comprising:

(a) treating cellulose with a formulation of about 5% to 30%, by weight, of an inorganic phosphorylating agent, and about 0% to 30%, by weight, of urea;

(b) curing the cellulose for about 2.5–10 minutes at about 160°–170° C.;

(c) dyeing the cellulose with a cotton dye at a concentration of about 0.1% to 10% based on the weight of the fabric.

4,207,069

METHOD OF PRINTING CELLULOSE FIBER AND POLYESTER/CELLULOSE MIXED FIBER

Masahiko Ono, Kasukabe, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1977, Ser. No. 771,678

Claims priority, application Japan, Feb. 26, 1976, 51-20507

Int. Cl.[2] D06P *3/82, 3/60*

U.S. Cl. 8—471 **5 Claims**

1. A method of printing cellulose fiber and polyester/cellulose mixed fiber, comprising pretreating a cellulose fiber or polyester/cellulose mixed fiber with a solution containing (i) a swelling agent for cellulose fiber, (ii) a resin capable of being dyed with an oil-soluble dye or a disperse dye, (iii) a cross-linking agent, and (iv) a cross-linking catalyst, and then printing the resulting fiber by the dry transfer printing process using a transfer paper printed with an ink containing a sublimable, oil-soluble dye or disperse dye.

4,207,070

PEROXYGEN BLEACHING AND COMPOSITIONS THEREFOR

Joseph H. Finley, Metuchen; Gaylen R. Brubaker, Lawrenceville, and Burton M. Baum, Princeton, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 10, 1978, Ser. No. 949,836

Int. Cl.[2] D06L *3/02, 3/04*

U.S. Cl. 8—111 **6 Claims**

1. A process for the low temperature bleaching of stained and/or soiled fabrics characterized by treating them with an aqueous peroxygen bleaching solution having a pH of 6 to 12 and containing as a peroxygen activator therefor, an activating amount of a N-sulfonylazole of the formula

where Z represents the number of carbon and nitrogen atoms necessary to complete a heterocyclic ring selected from the class consisting of pyrazole, pyrrole, triazole and benzotriazole wherein said ring can be substituted with phenyl, alkyl of 1 to 10 carbon atoms, halogen, amino, cyano, nitro, alkoxy of 1 to 10 carbon atoms and R is an alkyl radical of 1 to 10 carbon atoms.

4,207,071

DURABLE MODIFICATION OF FIBROUS SUBSTRATES USING A POLYOXYETHYLENE-CONTAINING SILANE AND ARTICLES THEREFROM

Jonathan Lipowitz, Midland, and Robert E. Kalinowski, Auburn, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Feb. 1, 1979, Ser. No. 8,654

Int. Cl.[2] D06M *15/66, 15/68*

U.S. Cl. 8—115.6 **8 Claims**

1. A process for durably modifying a fibrous substrate with a polyoxyethylene-containing silane, said process comprising

(A) applying to the fibrous substrate a homogeneous liquid composition obtained by mixing components comprising

(i) a volatile liquid carrier,

(ii) a siloxane polymerization catalyst and

(iii) a polyoxyethylene-containing silane having the formula

$$R(OCH_2CH_2)_xOR'SR''SiZ_3$$

wherein R denotes a monovalent terminating radical selected from the group consisting of hydrogen, lower alkyl and lower acyl, R′ and R″ each denote, independently, a divalent aliphatic radical having from 1 to 6 carbon atoms, the total number of carbon atoms in R′ and R″ intervening between Si and O being at least 3, each Z denotes a hydrolyzable radical or a hydroxyl radical and x has an average value of at least 3, and

(B) heating the applied homogeneous liquid composition to remove any volatile liquid carrier therefrom and to cure the polyoxyethylene-containing silane.

6. As an article of manufacture a fibrous substrate having durably affixed thereto a polyoxyethylene-containing siloxane polymer having the unit formula

$$R(OCH_2CH_2)_xOR'SR''\underset{\displaystyle Z_a}{\underset{|}{Si}}O_{(3-a)/2}$$

wherein R denotes a monovalent terminating radical selected from the group consisting of hydrogen, lower alkyl and lower acyl, R′ and R″ each denote, independently, a divalent aliphatic radical having from 1 to 6 carbon atoms, the total number of carbon atoms in R′ and R″ intervening between Si and

O being at least 3, each Z denotes a hydrolyzable radical or a hydroxyl radical, x has an average value of at least 3 and a has an average value of less than 3.

4,207,072

PROCESSES FOR REMOVING IMPURITIES FROM TEXTILE MATERIALS

Manfred Schuierer, Zell, Fed. Rep. of Germany, assignor to Bruckner Apparatebau GmbH, Erbach, Fed. Rep. of Germany

Filed Feb. 21, 1975, Ser. No. 551,743

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1974, 2409488

Int. Cl.[2] B08B *3/08*

U.S. Cl. 8—137 **17 Claims**

1. A process of removing impurities from textile material comprising first applying to said material a first liquid in which the impurities are soluble; subsequently expelling said first liquid and impurities dissolved therein from said material by applying to said material a second liquid immiscible with the first and having a specific gravity different from that of the first liquid; maintaining said material out of contact with said first liquid following the expulsion of the latter from said material; and separating said first and second liquids in liquid form.

4,207,073

TEXTILE FINISH AND PROCESSES FOR ITS PREPARATION AND USE

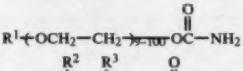
Harro Petersen, Frankenthal, Fed. Rep. of Germany; Panemangalore S. Pai, and Manfred Reichert, both of Charlotte, N.C., assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 4, 1979, Ser. No. 815

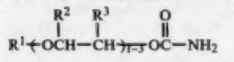
Int. Cl.[2] D06M *15/54*

U.S. Cl. 8—187 **3 Claims**

1. A finish for textiles containing, or consisting of, cellulose, which comprises an aqueous solution, of from 30 to 70 percent strength by weight, of a mixture of the conventionally formaldehyde-methylolated carbamates I and II



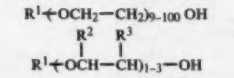
I



II

where R^1 is hydrogen or alkyl of 1 to 4 carbon atoms and R^2 and R^3 is hydrogen, or one is hydrogen and the other is methyl, in the weight ratio I:II of from 12:1 to 1:20.

2. A process for the preparation of a textile finish as claimed in claim 1, by reacting a glycol or an alkylglycol of the formulae III and IV



III

IV

where R^1, R^2 and R^3 have the above meanings, with urea at above 100° C., so as to eliminate ammonia and give carbamates, and subsequent conventional methylolation with formaldehyde, wherein, in a first stage, the glycol or alkylglycol of the formula III is reacted to the extent of at least 50% with urea, in the absence of a catalyst, at from 130° to 160° C., to give the carbamate I, and in a second stage, carried out either in the presence of an ion exchanger, containing nickel ions, as the catalyst, at from 130° to 165° C., or in the absence of a catalyst at from 150° to 200° C., the carbamate mixture in the weight ratio I:II of from 12:1 to 1:20, is prepared by addition of the glycol or alkylglycol of the formula IV and further urea.

4,207,074

LIQUID SAMPLE DISTRIBUTOR

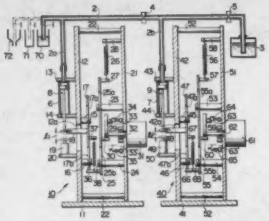
Nobuyoshi Suzuki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan

Filed Feb. 21, 1978, Ser. No. 879,131

Claims priority, application Japan, Feb. 25, 1977, 52-22089[U]

Int. Cl.[2] G01N *1/14, 33/00*

U.S. Cl. 23—230 R **5 Claims**



1. A method for withdrawing and dispensing a sample liquid from a tube filled with a rinsing liquid, said tube having first and second open ends, first and second tube branches respectively spaced inwardly from said first and second tube ends, a first valve connected between said first and second branches, a second valve connected between said second branch and said second end, a first pump in said first branch between said first open end and said first valve, and a second pump in said second branch between said second open end and said second valve, the method comprising the steps of:

(a) inserting said first open end of said tube into a sample liquid container;

(b) closing said first and second valve and drawing a first predetermined quantity of rinsing liquid into said first pump from said first branch to cause a corresponding predetermined quantity of sample liquid to be drawn into said first branch through said first open end of said tube;

(c) opening said second valve and drawing a second predetermined quantity of rinsing liquid into said second pump through said second branch and said second open end of said tube, said second predetermined quantity of rinsing liquid being less than said first predetermined quantity of rinsing liquid; and

(d) closing said second valve, opening said first valve and pumping said second predetermined quantity of rinsing liquid back into said second branch of said tube, to urge a corresponding predetermined portion of said predetermined quantity of said sample liquid to exit through said first open end of said tube.

4,207,075

RABBIT IMMUNOGLOBULIN-N-(3-PYRENE)-MALEIMIDE CONJUGATE FOR FLUORESCENT IMMUNOASSAY

Robert P. Liburdy, 106 Thornell, San Antonio, Tex. 78235

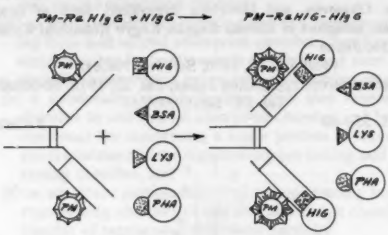
Filed Aug. 8, 1978, Ser. No. 932,094

Int. Cl.[2] G01N *33/16, 21/00*

U.S. Cl. 23—230 B **5 Claims**

1. A fluorescent immunospecific affinity reagent indicator

useful in determining the concentration of human immunoglobulin in a sample which comprises a conjugate of an im-



munospecific rabbit antihuman immunoglobulin with N-(3-pyrene)maleimide.

4,207,076

GASOLINE-ETHANOL FUEL MIXTURE SOLUBILIZED WITH ETHYL-T-BUTYL ETHER

Francis S. Bove, Wappingers Falls, and Sheldon Herbstman, Spring Valley, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,506
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—56 **9 Claims**

1. In a fuel consisting essentially of a major amount of gasoline, a minor amount of hydrous ethanol the improvement consisting of a cosolvent amount of crude alkyl-t-butyl ether bottoms.

4,207,077

GASOLINE-ETHANOL FUEL MIXTURE SOLUBILIZED WITH METHYL-T-BUTYL-ETHER

Francis S. Bove; William M. Sweeney, both of Wappingers Falls, and Sheldon Herbstman, Spring Valley, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 23, 1979, Ser. No. 14,507
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—56 **9 Claims**

1. In a (A) fuel consisting essentially of a major amount of gasoline, a minor amount of hydrous ethanol, the improvement consisting of adding a co-solvent amount of substantially pure methyl-t-butyl ether sufficient to render said fuel haze-free.

4,207,078

DIESEL FUEL CONTAINING MANGANESE TRICARBONYL AND OXYGENATED COMPOUNDS

William M. Sweeney, and Kenneth L. Dille, both of Wappingers Falls, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 25, 1979, Ser. No. 32,990
Int. Cl.[2] C10L *1/18*
U.S. Cl. 44—68 **6 Claims**

1. A diesel engine fuel comprising a hydrocarbon base diesel fuel composition boiling in the range of 350° to 700° F. containing a particulate-suppressing mixture of 0.1 to 1.0 weight percent of an alkyl cyclopentadienyl manganese tricarbonyl with 0.01 to 1.5 weight percent of at least one oxygenated compound of the group of aldehydes and ketones having from 3 to 16 carbon; normal alcohols having from 3 to 16 carbon atoms in the chain; ethers having from 2 to 16 carbon atoms and mixtures thereof.

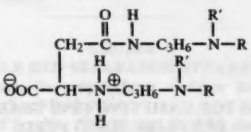
4,207,079

PRIMARY ALIPHATIC HYDROCARBON AMINO ALKYLENE-SUBSTITUTED ASPARAGINE AND A MOTOR FUEL COMPOSITION CONTAINING SAME

Sheldon Herbstman, Spring Valley, and Peter Dorn, Lagrangeville, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

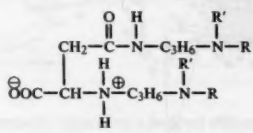
Filed Apr. 19, 1979, Ser. No. 31,557
Int. Cl.[2] C10L *122*
U.S. Cl. 44—71 **16 Claims**

1. The compound represented by the formula:



in which R is a primary aliphatic hydrocarbon radical having from about 6 to 30 carbon atoms and R′ is hydrogen or a methyl radical.

8. A motor fuel composition comprising a mixture of hydrocarbons in the gasoline boiling range containing from about 0.0002 to 0.2 weight percent of an additive represented by the formula:



in which R is a primary aliphatic hydrocarbon radical having from about 6 to 30 carbon atoms and R′ is hydrogen or a methyl radical.

4,207,080

DIMERIZATION OF NORBORNADIENE TO EXO-EXO HEXACYCLIC DIMER

George Suld, Springfield; Abraham Schneider, Overbrook Hills, and Harry K. Myers, Jr., Aston, all of Pa., assignors to Suntech, Inc., St. Davids, Pa.

Filed Dec. 11, 1975, Ser. No. 640,107
Int. Cl.[2] C10L *1/04*; C07C *3/21*
U.S. Cl. 585—22 **12 Claims**

THEORETICALLY POSSIBLE DIMERS OF NORBORNADIENE

1. Process for dimerizing norbornadiene comprising:
(a) contacting a feed consisting essentially of norbornadiene in the presence of an effective amount of a three component catalytic system of diethylaluminum chloride, ferric or ferrous or cobaltic or cobaltous acetylacetonate and bis(1,2-diphenylphosphino)ethane;
(b) the contacting occurring within a temperature range between from about 40° C. to about 110° C; and

wherein an exo-exo form of a hexacyclic dimer of norbornadiene is the major product.

10. A blend consisting essentially of saturated hexacyclic dimers of norbornadiene having a sufficient amount of both endo-endo and exo-exo forms of said dimers whereby said blend has a melting point of its last crystal low enough to permit use of the blend as a high energy fuel.

4,207,081

PROCESS FOR GASIFYING FINE GRAINED AND DUST-LIKE SOLID FUELS

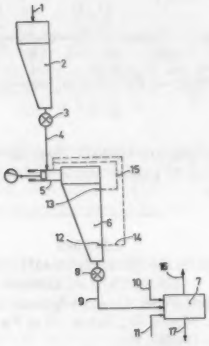
Gerhard Preusser, Essen; Karl-Heinz Dutz, Herten, and Eberhard Goeke, Essen, all of Fed. Rep. of Germany, assignors to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 17, 1978, Ser. No. 878,746

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1977, 2707266

Int. Cl.[2] C10J *3/46*

U.S. Cl. 48—210 9 Claims



1. A process of conveying coal powder or coal dust by way of a pressurized lock-type basin into a gasifier without causing aggregation or compacting of the coal powder or dust, the said process comprising

pouring the powder or dust at atmospheric pressure into a receiving receptacle and filling the receptacle only partially so as to preserve the loose consistency of the powder-dust,

then moving the receptacle to align it with a gas duct and passing pressurized gas into the receptacle through said duct, the pressure of the gas being substantially equal to the pressure in said pressurized lock-type basin,

thereupon moving the receptacle further to cause it to enter the lock-type basin and to discharge the coal powder or dust by gravity out of the receptacle into the lock-type basin, and

finally passing the coal powder or dust from the lock-type basin into the gasifier where the coal is subjected to gasification by heat and pressure, the pressure in the lock-type basin and in the gasifier being about equal wherein the receptade is provided in a piston or between pistons reciprocating in a cylinder so as to be successively aligned below the filling station for the coal, below the gas duct and finally within the lock-type basin for the discharge of the coal.

4,207,082

APPARATUS FOR THE CONTINUOUS PURIFICATION OF EXHAUST GAS CONTAINING SOLVENT VAPORS

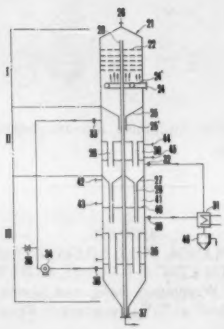
Tsuneo Okamoto, and Heiichiro Murakami, both of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1976, Ser. No. 706,618

Claims priority, application Japan, Jul. 25, 1975, 50-90868

Int. Cl.[2] B01D *53/12*

U.S. Cl. 55—60 3 Claims



1. An adsorption process for removing organic solvent vapours from a gas stream comprising:

(a) passing the gas stream through a fluidized bed of adsorbent particles contained in a first zone to adsorb the organic solvent vapours and to form a first purified gas;

(b) continuously circulating a portion of the adsorbent particles through second and third zones, each containing a moving bed of said adsorbent particles, successively, and then returning said portion to the first zone;

(c) contacting said adsorbent particles in said third zone at a high temperature with an inert gas to desorb said organic vapours, thus forming a third gaseous quantity containing said inert gas and the desorbed organic vapours;

(d) removing said third quantity from said third zone at a high temperature and cooling said third quantity to condense and remove a major portion of said organic vapours as liquid, thus forming a second gaseous quantity containing cooled inert gas and a minor portion of said organic vapours in the gaseous phase;

(e) passing said second gaseous quantity into said second zone for contact with said adsorbent particles exiting said first zone to remove the minor portion of the organic vapours from the inert gas, thus purifying the inert gas; and

(f) recycling the purified inert gas from step e to said third zone for contact with said adsorbent particles.

2. An adsorption apparatus for the continuous purification of exhaust gases contaminated with solvent vapours, comprising, in a single column:

(a) a first adsorption chamber having a plurality of perforated plates for forming fluidized beds of solid adsorbent particles, means for introducing an exhaust gas containing solvent vapours into said chamber, and means for discharging purified gas;

(b) a second adsorption chamber provided downstream of said first adsorption chamber and partitioned therefrom by a partition providing a gas seal in cooperation with solid adsorbent particles coming from said first adsorption chamber, and associated with means for transferring the adsorbent particles from said first adsorption chamber to said second adsorption chamber and with means for forming moving beds of adsorbent particles;

(c) a regenerating chamber provided downstream of said second adsorption chamber and partitioned therefrom by a partition providing a gas seal in cooperation with solid

adsorbent particles from said second adsorption chamber, said regenerating chamber having means for forming downwardly moving beds of adsorbent particles and means for transfer of the solid adsorbent particles from said second adsorption chamber;

(d) an incondensable regenerating gas recycling circuit leading from said second adsorption chamber to said regenerating chamber for continuously circulating an inert incondensable regenerating gas to said regenerating chamber;

(e) a condensing circuit leading from said regenerating chamber to said second adsorption chamber and having a condenser for condensing a major portion of solvent vapours contained in the regenerating gas exiting said regenerating chamber; and

(f) an adsorbent particle recycling passage leading from said regenerating chamber to said first adsorption chamber for transfer of regenerated adsorbent particles.

4,207,083

DIFFUSER ASSEMBLY AND METHOD OF ASSEMBLING

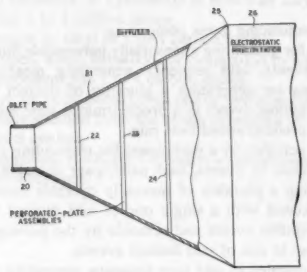
Rolf Gelhaar, Weilrod, and Werner Schwarzkopf, Butzbach, both of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,163

Claims priority, application Fed. Rep. of Germany, May 3, 1977, 2719676

Int. Cl.² B03C *3/36*; B01D *51/00*

U.S. Cl. 55—129 **9 Claims**



1. A gas-distributor assembly, especially for use in a divergent passage connecting a source of gas with a gas-processing apparatus, said assembly comprising:

a pair of end elongated structural-shape profiled bars having inwardly open channels, and a plurality of mutually spaced intermediate elongated structural-shape profiled bars having oppositely open channels and between and coplanar with said end profiled bars whereby pairs of channels confront one another, said profiled bars being parallel to one another, the channels of the end bars facing each other and one of the channels of one of said intermediate bars

a plurality of perforated profiled plates spanning the mutually facing channels of each end bar and a respective intermediate bar and facing channels of the intermediate bars, said plates being formed with profiled edges received in respective channelss of each pair; and

plug connectors mounting said plates on said profiled bars, said plug connectors each having a tubular member received in a respective profiled edge of one of said plates, and a transverse spacing member connected to said tubular member and received in the respective channels, said assembly being located in said gas passage.

7. A method of assembling a gas-distributing assembly comprising the steps of:

(a) disposing an array of vertical, spaced-apart profiled bars in a horizontal plane in a gas passage, said profiled bars having pairs of channels confronting one another and spaced apart uniformly over the width of said gas passage, said bars including end bars on opposite sides of the array and intermediate bars between the end bars;

(b) inserting a perforated plate for a lower course between each pair of channels with respective profiled edges received in the channels of each pair;

(c) locking the plates of the lower course in the respective channels by plug connectors; and

(d) then inserting perforated plates of a second course in said channels above the plates of the first course and at least partly locking them in place with the previously applied plug connectors.

4,207,084

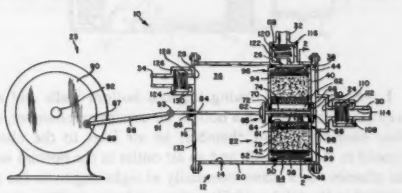
SINGLE BED SEPARATOR APPARATUS

Paul J. Gardner, Davenport, Iowa, assignor to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 784,299, Apr. 4, 1977, abandoned. This application Aug. 21, 1978, Ser. No. 934,748

Int. Cl.² B01D *53/06*

U.S. Cl. 55—181 **34 Claims**



1. An apparatus for separating a product effluent from a fluid mixture comprising:

a housing having a chamber therein with a first port, a second port and a third port, said first port being in communication with said fluid mixture, said second port being connected to a product effluent responsive device, and said third port being connected to a discharge conduit;

wall means for retaining a bed of adsorption particles in said chamber, said wall means forming a header chamber between said bed of adsorption particles and said second port in said housing, said wall means dividing said chamber into an expansion chamber and a pressurizing chamber, said expansion chamber being connected to said third port and said pressurizing chamber being connected to said first port;

first valve means for allowing a fixed volume of said fluid mixture to flow through said first port during a first part of an operational cycle and for preventing fluid flow from the chamber during a second part of the operational cycle when said fluid mixture is presented to the bed of adsorption particles where a component is adsorbed and the product effluent communicated to said header chamber;

second valve means for preventing communication of any product effluent from said header chamber whenever the fluid pressure level in said chamber is below a predetermined value;

third valve means for allowing said product effluent to flow from the header chamber and purge said bed of adsorption particles of said component by flowing through said third port during said first part of the operational cycle and for preventing fluid flow through said third port during said second part of the operational cycle; and

motor means for reciprocating the wall means in the chamber to compress the fluid mixture in the pressurizing chamber and expanding the product effluent and component in the expansion chamber during the second part of the operational cycle, and to expand the fluid mixture in the pressurizing chamber and thereby draw said fluid mixture past said first port to establish said fixed volume of

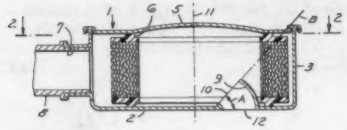
fluid mixture in the pressurizing chamber and to compress the product effluent and component in said expansion chamber when an equilibrium fluid pressure is achieved with the product effluent in the header chamber and thereby discharge the product effluent and component from the expansion chamber through said third port.

4,207,085

AIR CLEANER AIR EXPANSION CHAMBER CONSTRUCTION

Colin R. Clifton, Basildon, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 16, 1978, Ser. No. 961,423
Int. Cl.[2] B01D *50/00*
U.S. Cl. 55—276 **5 Claims**



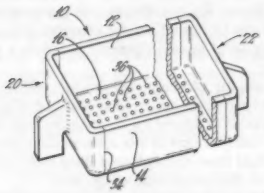
1. An air cleaner having top and bottom walls and a side enclosing wall defining a hollow air expansion chamber, an air filter element in said chamber, an air inlet to the chamber located in the side wall, and an air outlet in the bottom wall of the chamber in a plane essentially at right angles to the plane containing the inlet, said filter element being positioned in said chamber such that air flows from said air inlet through said element and out through said air outlet, the air outlet also being positioned asymmetrically with respect to the top wall and surrounding side wall of the chamber and including a cowl extending from said outlet into said chamber and the lower portion of said cowl being essentially in the plane of the said bottom wall to provide outlet flow of air in a direction perpendicular to the plane of the outlet and said cowl having an inlet in a plane that is inclined to the plane of said bottom wall and directed toward said air inlet.

4,207,086

STREAM FEEDER APPARATUS

Arthur C. Heitmann, Newark, and Arnold J. Eisenberg, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 23, 1977, Ser. No. 864,046
Int. Cl.[2] C03B *37/02*
U.S. Cl. 65—1 **8 Claims**



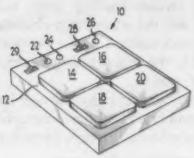
8. A bushing for use in the production of glass fibers comprising a bottom wall member and a one piece end member having a portion extending through a filleted corner to form a bottom wall portion, said wall portion being connected to said bottom wall member by a butt weld.

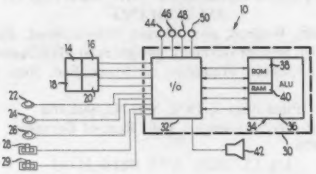
4,207,087

MICROCOMPUTER CONTROLLED GAME

Howard J. Morrison, Deerfield, Ill., and Ralph H. Baer, Manchester, N.H., assignors to Marvin Glass & Associates

Filed Sep. 19, 1977, Ser. No. 834,643
Int. Cl.[3] A63B *71/04*
U.S. Cl. 273—1 E **39 Claims**





1. A sequencing game comprising:

means for generating a sensorially perceptible time sequence of events, said sequence generating means including means for generating a plurality of distinct sensorially perceptible events in a predetermined time sequence and at a predetermined time rate;

means actuable by a participant for responding to said time sequence of events, said participant actuable means including a plurality of manually operable controls, each associated with a single one of said distinct sensorially perceptible events and actuable by the participant in response to one of said distinct events;

means coupled to said time sequence generating means and to said participant actuable means for determining the corrections of the participant's response, said correctness determining means including means for storing a representation of the time sequence generated by said time sequence generating means and means for comparing the stored representation of the time sequences generated by said time sequence generating means with the time sequence of actuation of said manually operable controls, said comparing means including means for providing a first indication when said manually operable controls are actuated in a predetermined sequence corresponding to the sequence generated by said time sequence generating means and for generating a second indication when said manually operable controls are actuated in a time sequence other than said predetermined time sequence;

means responsive to said second indication for generating an error signal and to said first indication for increasing the length of the time sequence generated by said time sequence generating means and for rendering said time sequence generating means operative to generate said increased length time sequence;

means responsive to the length of said time sequence for increasing said predetermined time rate when the length of said sequence exceeds a predetermined length; and

means coupled to said representation storing means for providing a repetition of the last generated sequence that was followed by a correct participant response.

4,207,088

HERBICIDAL 1,3-DIOXANES

Marvin J. Konz, Lockport, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

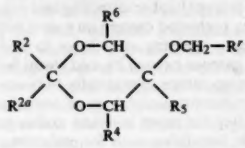
Continuation of Ser. No. 811,918, Jun. 30, 1977, abandoned, which is a continuation-in-part of Ser. No. 719,311, Aug. 31, 1976, Pat. No. 4,035,178. This application Sep. 15, 1978, Ser. No. 943,271

The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.

Int. Cl.[2] A01N 9/00; C07D 319/06

U.S. Cl. 71—88 32 Claims

1. A compound of the formula:



wherein

R^2 is hydrogen, alkyl, chloroalkyl, bromoalkyl, alkoxyalkyl, or cyanoalkyl, in which an alkyl component has 1 to 4 carbon atoms, or phenyl;

R^{2a} is hydrogen; and R^{2a} and R^2 taken together may represent a divalent polymethylene radical of 4 to 6 carbon atoms, and so form a spiro structure;

R^4 is alkyl, haloalkyl, or cyanoalkyl in which an alkyl component has 1 to 4 carbon atoms;

R^5 is hydrogen or alkyl of 1 to 4 carbon atoms;

R^6 is hydrogen, alkyl, haloalkyl, or cyanoalkyl in which an alkyl component has 1 to 4 carbon atoms;

R^r is phenyl, furyl, or phenyl with one or two non-hydrogen substituents selected from the group consisting of chloro, fluoro, and methyl;

in which compound, $—OCH_2—R^r$ bears a cis-relationship to R^2 other than hydrogen.

4,207,089

THIOLCARBAMATE DERIVATIVES OF 3-TRIHALOMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS HERBICIDES

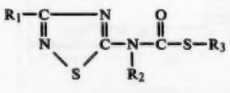
Walter A. Gay, Cheshire, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 24, 1979, Ser. No. 6,060

Int. Cl.[2] A01N 9/12; C07D 285/08

U.S. Cl. 71—90 5 Claims

1. A method for controlling undesirable plant growth at a locus to be protected comprising applying to the locus a herbicidally effective amount of a compound of the formula



wherein R_1 is CCl_3 or CF_3; R_2 is a hydrogen or a lower alkyl group of 1 to 4 carbon atoms; and R_3 is a lower alkyl group of 1 to 4 carbon atoms.

4,207,090

AMINO ESTER DERIVATIVES OF 3-TRIHALOMETHYL-1,2,4-THIADIAZOLES AND THEIR USE AS HERBICIDES

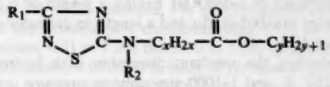
Eugene F. Rothgery, North Branford, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jan. 25, 1979, Ser. No. 6,318

Int. Cl.[2] A01D 9/12; C07D 285/08

U.S. Cl. 71—90 5 Claims

1. A method for controlling undesirable plant growth at a locus to be protected comprising applying to the locus a herbicidally effective amount of a compound of the formula



wherein R_1 is a CCl_3 or CF_3 group; R_2 is a hydrogen or a lower alkyl group of 1 to 4 carbon atoms; x is from 1 or 4; and y is from 1 to 5.

4,207,091

METHOD OF PREVENTING PLANTS FROM DAMAGE BY FROST

Hanspeter Fischer, Bottmingen, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

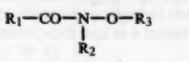
Continuation-in-part of Ser. No. 764,625, Feb. 1, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 938,207

Claims priority, application Switzerland, Feb. 9, 1976, 1522/76

Int. Cl.[2] A01N 9/24

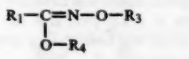
U.S. Cl. 71—113 10 Claims

1. A method of preventing frost damage on plants which comprises applying to the plant or to parts of the plants to be protected against frost damage, before the onset of winter or before a suspected outbreak of frost, an effective amount of a hydroxamic acid derivative of the formula



(I)

or of the "tautomeric" formula



(Ia)

wherein

R_1 is a straight-chain or branched C_1–C_7 alkyl group optionally substituted by chlorine, or a C_3–C_6 cycloalkyl group,

R_2 is hydrogen or the methyl group,

R_3 is hydrogen, the methyl group, an alkylcarbonyl group in which the straight-chain or branched alkyl moiety has from 1 to 11 carbon atoms, or is an equivalent of a metal selected from the group consisting of alkali metals, alkaline earth metals, manganese, iron and copper, or an amine or quaternary ammonio cation, and

R_4 is hydrogen, the methyl or ethyl group.

4,207,092

ACICULAR α-IRON PARTICLES, THEIR PREPARATION AND RECORDING MEDIA EMPLOYING SAME

Kenneth L. Berry, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 774,138, Mar. 3, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,811

Int. Cl.[2] H01F *10/02*; C22C *1/04*

U.S. Cl. 75—0.5 AA 6 Claims

1. Process for preparing acicular α-iron particles, which process comprises:

(a) dispersing acicular particles of α-FeOOH intimately with CaO, the CaO/α-FeOOH weight ratio being at least 1:1, the particles of α-FeOOH having a length of 0.1–1μ, a diameter of 0.005–0.05μ and a length to diameter ratio of at least 10:1;

(b) contacting the resultant dispersion with hydrogen at 150–350° C. and 1–1000 atmospheres pressure until substantial uptake of hydrogen by the dispersion ceases;

(c) removing CaO and Ca $(OH)_2$ from the reaction mixture from (b); and

(d) recovering particulate product containing at least 75 weight % iron (total iron content) and at least 25 weight % acicular α-iron metal, said particulate product having a length less than 1μ, a length to diameter ratio of at least 10:1, a coercivity (iH_c) of greater than 800 oersteds, a saturation magnetization (σ_s) of at least 110 emu/g, a residual magnetization (σ_r) of at least 50 emu/g and a ratio of σ_r/σ_s of at least about 0.45.

4,207,093

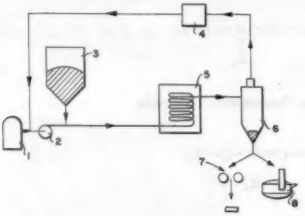
PROCESS FOR REDUCING METAL OXIDE CONTAINING ORES

Hector F. Pastorino, Campichuelo 900-9° P., Buenos Aires, and Manuel D. P. De Meurville, Sierra Grande, Casa D' No 23-Villa Hipasam, Sierra Grande Rio Negro, both of Argentina

Continuation-in-part of Ser. No. 737,104, Oct. 29, 1976, abandoned. This application Jul. 21, 1978, Ser. No. 926,970

Int. Cl.[2] C21B *13/00*

U.S. Cl. 75—26 5 Claims



1. A method for reducing the metal oxide content of a particulate ore to the metallic state, said particulate ore having a particle size such that at least about 85% thereof will pass through a 200 mesh screen, comprising entraining said particles within a turbulent stream of reducing gas for said metal oxide for a time and at a temperature sufficient for said reducing gas to react with and to reduce said ore to a finely divided metal, thereby at least partially oxidizing said reducing gas, the said turbulence being sufficient to impart to said particles a kinetic energy sufficient to prevent agglomeration thereof.

4,207,094

METHOD FOR PREHEATING THE OXYGEN IN AN OXYGEN STEEL MAKING PROCESS

Arnulf Diener; Fritz Meininghaus; Günter Oehmen, and Robert Schrott, all of Dortmund, Fed. Rep. of Germany, assignors to Hoesch Werke Aktiengesellschaft, Dortmund, Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,004

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1977, 2713171

Int. Cl.[2] C21C *5/30*

U.S. Cl. 75—60 2 Claims

1. A method for preheating the oxygen used in an oxygen steel making process, comprising the steps of: feeding oxygen from an oxygen storage bunker; directing said oxygen to a blast lance for blasting preheated oxygen on a steel bath; generating a supply of steam; applying said steam to said oxygen for preheating said gaseous oxygen by said steam before entering the lance to a temperature substantially between 200° C. and 300° C.; and recovering latent heat of vaporization of said steam by expanding the steam in a heat exchanger; said latent heat and sensible heat being used for preheating the oxygen; said latent heat and sensible heat being applied to the oxygen through heat conducting walls in the heat exchanger for preheating the oxygen, said walls separating the steam from the oxygen, said oxygen being predominantly preheated by said latent heat; and removing the steam from the heat exchanger after said latent heat has been recovered therefrom.

4,207,095

MATERIAL AND METHOD FOR OBTAINING HYDROGEN BY DISSOCIATION OF WATER

Eugene R. Anderson, Wills Point, Tex., assignor to Horizon Manufacturing Corporation, Wills Point, Tex.

Filed May 4, 1978, Ser. No. 902,705

Int. Cl.[2] C01B *1/08*

U.S. Cl. 75—134 N 4 Claims

1. A material for the generation of hydrogen from water which comprises an amalgam of an alkali metal, mercury and aluminum wherein the atomic weight ratio of alkali metal to mercury is from about 3:1 to about 1:1.5 and the atomic weight ratio of alkali metal to aluminum is from about 1:1 to about 3:1.

4,207,096

METHOD OF PRODUCING GRAPHITE-CONTAINING COPPER ALLOYS

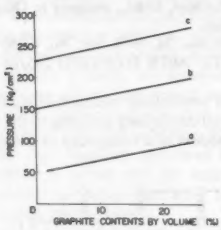
Masateru Suwa, Tokai, and Katsuhiro Komuro, Hitachi, both of Japan, assignors to Hitachi, Ltd., Japan

Continuation-in-part of Ser. No. 764,429, Jan. 31, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,538

Claims priority, application Japan, Feb. 2, 1976, 51/9365

Int. Cl.[2] C22C *9/00*

U.S. Cl. 75—153 16 Claims



1. A method for manufacturing a graphite-containing copper alloy which comprises the steps of:

(1) preparing a melt of a copper base alloy containing at least 50% by weight of copper and at least one member se-

lected from the group consisting of Ti, Cr, Zr and Mg in amounts of 0.1 to 10% by weight in case of Ti, Cr and Zr and in an amount of 6 to 10% by weight in case of Mg,

(2) introducing into the melt graphite particles of which at least 95% of the particles have a particle size ranging between 50 and 2,000 μm in an amount of 5 to 50% by volume based on the total volume of the melt and the graphite particles under agitation at a melt temperature 20° to 100° C. higher than the liquidus temperature of said copper base alloy, to homogenously disperse the particles in the melt, until the particles are wetted with the melt by the action of the at least one member,

(3) charging the melt into a heat conductive metal mold, keeping the homogeneous dispersion of the particles, and

(4) applying to the surface of the melt, immediately after said charging the melt, until the solidification of the melt is substantially finished, a pressure of at least 150 kg/cm^2 with a plunger so as to accelerate the heat transfer from the melt to the metal mold, and to supply the melt into macro holes which may be formed in a solidifying ingot in the metal mold, whereby flotation of graphite particles during solidification is substantially prevented.

16. A method for manufacturing a graphite-containing copper alloy which comprises the steps of:

(1) preparing a melt of a copper base alloy containing at least 50% by weight of copper and at least one member selected from the group consisting of Ti, Cr, Zr and Mg in amounts of 0.1 to 10% by weight in case of Ti, Cr and Zr and in an amount of 6 to 10% by weight in case of Mg,

(2) introducing into the melt graphite particles, the surfaces of which particles are free from a metal coating, of which at least 95% of the particles have a particle size ranging between 50 and 2,000 μm in an amount of 5 to 50% by volume based on the total volume of the melt and the graphite particles under agitation at a melt temperature 20° to 100° C. higher than the liquidus temperature of said copper base alloy, to homogeneously disperse the particles in the melt, until the particles are wetted with the melt by the action of the at least one member,

(3) charging the melt into a heat conductive metal mold, keeping the homogeneous dispersion of the particles, and

(4) applying to the surface of the melt, immediately after said charging the melt, until the solidification of the melt is substantially finished, a pressure of at least 150 kg/cm^2 with a plunger so as to accelerate the heat transfer from the melt to the metal mold, and to supply the melt into micro holes which may be formed in a soldifying ingot in the metal mold.

4,207,097

LEAD ALLOY FOR LEAD-ACID BATTERIES AND PROCESS FOR PRODUCING THE ALLOY

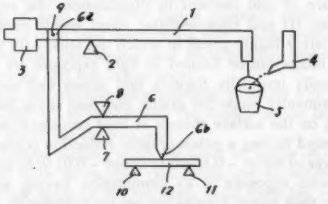
Sadao Fukuda, Daito; Hidemi Fukunaga, Osaka, and Hiroshi Kumano, Daito, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 14, 1978, Ser. No. 969,556

Claims priority, application Japan, Dec. 23, 1977, 52-156892; Aug. 29, 1978, 53-106155

Int. Cl.^{2} C22F *11/10*

U.S. Cl. 75—166 D **5 Claims**



1. A lead alloy for use in lead-acid batteries consisting of 0.1 to 3.0% by weight of tin, 0.1 to 0.3% by weight of arsenic, 0.01 to 0.1% by weight of aluminum or copper and the balance lead.

4,207,098

NICKEL-BASE SUPERALLOYS

Stuart W. Shaw, Sutton Coldfield, England, assignor to The International Nickel Co., Inc., New York, N.Y.

Filed Jan. 9, 1978, Ser. No. 867,753

Int. Cl.^{2} C22C *19/05*

U.S. Cl. 75—171 **19 Claims**

1. An alloy consisting essentially of, by weight, 14% to 22% chromium, 5% to 25% cobalt, 1% to 5% tungsten, 0.5% to 3% tantalum, 2% to 5% titanium, 1% to 4.5% aluminum, with the sume of the titanium plus aluminum being 4.5% to 9.0%, 0 to 2% niobium, 0.31 to 1.2% boron, 0 to 3.5% molybdenum, 0 to 0.5% zirconium, 0 to 0.2% in total of yttrium of lanthanum or both, and 0 to 0.1% carbon, the balance apart from impurities, being essentially nickel.

4,207,099

PRODUCT AND PROCESS FOR NON-DUSTING ALUMINUM GRAIN

John H. O'Dette, and Stanton E. Jack, both of Kingston, Canada, assignors to Alcan Research and Development Limited, Canada

Filed Mar. 13, 1978, Ser. No. 885,957

Claims priority, application Canada, Mar. 24, 1977, 274647

Int. Cl.^{2} B22F *9/00*

U.S. Cl. 75—251 **12 Claims**

MAGNIFICATION 12 X

1. A continuous process for producing aluminum grain material having a pair of largely flat and parallel opposite faces and jagged edges, and which contains less than 5% by weight of oversize particles larger than a desired size range, comprising welded multiple particles, and less than 0.5% by weight of undersize fine dust-size particles passing a 65 mesh Tyler sieve, which process comprises comminuting aluminum sheet material by shearing by opposed sharp cutting edges in the presence of stearic acid, and at a cutter chamber temperature of below about 70° C.

7. An aluminum particulate material having a pair of largely flat and parallel opposite faces and jagged edges, in which material: (a) less than 5% by weight is oversize particles larger than a desired size range, comprising welded multiple particles, and (b) less than 0.5% is undersize fine dust-free particles passing a 65 mesh Tyler sieve.

4,207,100

FORMATION OF ELECTROSTATIC LATENT IMAGE

Sadao Kadokura; Kazuhiko Honjo, and Kazuhiro Kamei, all of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Filed May 9, 1978, Ser. No. 904,331

Claims priority, application Japan, May 12, 1977, 52-53763

Int. Cl.^{2} G03G *13/044*

U.S. Cl. 430—48 **6 Claims**

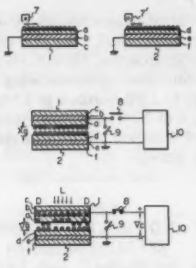
1. A process for forming an electrostatic latent image on a recording element having a dielectric layer superposed on a conductive electrode, which comprises the steps of:

charging with the same polarity the recording element and a

xerographic sensitive element having a photoconductive layer superposed on a conductive electrode;

bringing the photosensitive element in virtual contact with the recording element so that the charged surface of the photoconductive layer in the photosensitive element is in face-to-face relationship with the charged surface of the dielectric layer in the recording element; and

then, imposing an external voltage between the two conductive electrodes, said voltage having a polarity to produce



a charge on the conductive electrode on which the photoconductive layer is superposed which is opposite to the polarity of the charge on the photoconductive layer, and being of at least a magnitude sufficient for producing an electric field causing break down of air-gaps present between the contacted surfaces of the photosensitive element and the recording element, and simultaneously with or prior to the external voltage imposition, projecting an optical image onto the photoconductive layer in the photosensitive element.

4,207,101

PROCESS FOR MAGNETICALLY TRANSFERRING A POWDER IMAGE

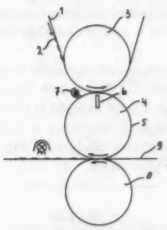
Mathias J. J. M. Vols, Velden, and Willem T. Draai, Helden-Panningen, both of Netherlands, assignors to Oce-van der Grinten N.V., Venlo, Netherlands

Filed Jul. 6, 1978, Ser. No. 922,336

Claims priority, application Netherlands, Jul. 7, 1977, 7707547

Int. Cl.² G03G *13/14*

U.S. Cl. 430—126 **11 Claims**



1. In a process for transferring a powder image formed of magnetically attractable developing powder, in which the powder image under influence of a magnetic field is transferred magnetically to a first receiving support and is subsequently transferred directly or indirectly from said first receiving support to a final receiving support, the improvement comprising that the first receiving support comprises a myriad of zones of a first material separated from each other by a second material, one of the said materials being magnetizable and the other of them being not magnetizable.

4,207,102

MARKING TRANSFER SHEETS AND PROCESS

Rolf Dessauer, Greenville, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 617,540, Sep. 29, 1975, abandoned, which is a continuation-in-part of Ser. No. 516,483, Oct. 21, 1974, abandoned. This application Mar. 8, 1978, Ser. No. 884,500

Int. Cl.² G03C *5/04, 5/24, 1/90, 5/16*

U.S. Cl. 430—252 **8 Claims**

1. A process for marking an object by

(a) exposing a transfer sheet comprising an imaging layer on a carrier support, the imaging layer comprising

(1) a radiation-sensitive composition which, on exposure to radiation, is capable of forming a colored substance that can absorb at least a portion of the wavelength light in the visible spectrum, the radiation-sensitive composition being present in an amount sufficient to produce, upon exposure to radiation, a detectable difference in diffuse reflectance of density between exposed and unexposed areas,

(2) pigment capable of diffusely reflecting the wavelengths of light absorbed by the colored substance, the pigment being present in a density of about from 0.05 to 0.34 gram per square foot and

(3) radiation-transmissive, colorless, polymeric, filmforming, thermoplastic binder;

the transfer sheet being exposed to a pattern of radiation of a wavelength to which the radiation-sensitive composition is sensitive to produce a detectable difference in diffuse reflectance density between exposed and unexposed areas;

(b) heating the image layer to a temperature of about from 40° to 220° C. at which the outer surface of the layer is adhesive; and

(c) contacting the outer surface of the imaging layer with a receiving support which is more adherent to the imaging layer than the carrier support.

4,207,103

PHOTOGRAPHIC PRINT-OUT SILVER HALIDE PROCESS

Paul B. Gilman, Jr., and Thaddeus D. Koszelak, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 26, 1978, Ser. No. 918,862

Int. Cl.² G03C *5/04*

U.S. Cl. 430—494 **8 Claims**

1. In a method for producing a print-out image in a photographic element which comprises a support having thereon at least one photosensitive silver halide emulsion, by imagewise exposure of said element to illumination, the improvement wherein: (I) said photosensitive silver halide emulsion comprises silver halide grains in which the sensitivity sites where latent image can be formed on light exposure are formed by chemically internally fogging said grains and said sites are predominantly inside the grains; and, said silver halide grains having on the surface thereof at least one electron-accepting compound having a polarographic reduction potential within the range of about −0.8 volt to about −0.01 volt; and, (II) said imagewise exposure is to illumination having an intensity greater than about 3 watts per square centimeter; whereby a print-out image is obtained which is resistant to background print-up.

4,207,104

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE HETEROCYCLYLAZONAPHTHOL DYE-RELEASING COMPOUNDS

Derek D. Chapman, Rochester, and E-Ming Wu, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 832,309, Sep. 12, 1977, abandoned. This application Jan. 9, 1979, Ser. No. 2,127

Int. Cl.[2] G03C *5/54, 1/40, 7/00, 1/10*

U.S. Cl. 430—225 36 Claims

31. A process for producing a photographic transfer image in color in an imagewise-exposed photographic element comprising a support having thereon at least one photosensitive silver halide emulsion layer, said emulsion layer having associated therewith a nondiffusible compound having at least one releasable 2-(2-heterocyclylazo)-1-naphthol dye moiety, said compound containing a ballasted carrier moiety which is capable of releasing said diffusible azo dye as a function of development of said silver halide emulsion layer under alkaline conditions, said heterocyclyl moiety containing a nitrogen atom adjacent to the point of attachment to the azo linkage, said heterocyclyl moiety not being substituted with a nitro group, and said heterocyclyl moiety being selected from the group consisting of pyridine, pyrimidine, quinoline, isoquinoline, pyrazine, pyridazine, thiazole, thiadiazole, triazole, benzothiazole and acinaphthothiazole, said process comprising:

(1) treating said photographic element with an alkaline processing composition in the presence of a silver halide developing agent to effect development of each of the exposed silver halide emulsion layers;

(2) said dye-releasing compound then releasing said diffusible azo dye imagewise as a function of said development of each of said silver halide emulsion layers;

(3) at least a portion of said imagewise distribution of said azo dye diffusing to a dye image-receiving layer; and

(4) contacting said imagewise distribution of said azo dye in said dye image-receiving layer with metal ions, thereby forming a metal-complexed, azo dye transfer image.

4,207,105

PLASMA-ETCHING IMAGE IN EXPOSED AGX EMULSION

Masamichi Sato, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation-in-part of Ser. No. 652,697, Jan. 27, 1976, abandoned. This application Jul. 12, 1977, Ser. No. 814,943

Claims priority, application Japan, Jan. 27, 1975, 50-11110

Int. Cl.[2] G03C *5/00*

U.S. Cl. 430—432 112 Claims

1. A method for producing an image comprising

(a) forming a silver image in the emulsion layer of a photographic material which comprises a support having thereon at least one silver halide emulsion layer, either directly or on at least one subbing layer on the support, by exposing and developing said photographic material to form image and non-image areas,

(b) heating the photographic material of about 150° C. to about 600° C. to decompose the binder of the layer or layers above the support, and

(c) then plasma etching away the layer or layers above the support with an oxygen containing gas to remove the non-image areas of the emulsion layer from the support without completely removing the image areas of the emulsion layer from the support.

4,207,106

POSITIVE WORKING O-QUINONE DIAZIDE PHOTOCOPYING PROCESS WITH ORGANIC RESIN OVERLAYER

Masaru Odawara; Tadao Yoyama, and Azusa Ohashi, all of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 746,555, Dec. 1, 1976, which is a continuation of Ser. No. 474,465, May 29, 1974, abandoned. This application May 10, 1978, Ser. No. 904,655

Claims priority, application Japan, May 29, 1973, 48-60074

Int. Cl.[2] G03F *7/08;* G03C *5/18, 5/34*

U.S. Cl. 430—165 9 Claims

1. A method of forming an image comprising image-wise exposing a light-sensitive material comprising a support having in order thereon a light-sensitive layer containing 20 to 100% by weight of an o-quinone diazide compound, the solubility of said compound being increased in alkaline solution upon irradiation with active light rays, said light-sensitive layer being coated directly on said support, and a non-light sensitive organic coating layer, said organic coating layer comprising a water-insoluble but organic solvent soluble high molecular weight compound having film forming properties, said high molecular weight compound being selected from the group consisting of styrene/maleic anhydride copolymer, styrene/acrylic acid copolymer, polyvinyl butyral, shellac and polyamide resin, said organic coating layer being water insoluble and barely soluble in alkaline solution, but permeable to alkaline solution, the exposed portion of said light-sensitive layer being completely removed by alkaline solution development along with superimposed corresponding co-extensive exposed portion of the organic coating layer by the alkaline developer, permeating the organic coating layer and dissolving the exposed portion of the light-sensitive layer, and developing the exposed light-sensitive material in an alkaline developer solution comprising an aqueous solution of an inorganic alkali or a basic solvent, the concentration of said alkali or solvent in said developer solution being about 1 to 20% by weight, said non-light-sensitive layer not dissolving in the developer solution more readily than the light-sensitive part of the light-sensitive layer, thereby forming an image of unexposed light-sensitive layer superimposed by corresponding co-extensive unexposed portion of organic coating layer, the thickness of each of said layers in said light-sensitive material being from about 0.01 g/m^2 to 7.0 g/m^2.

4,207,107

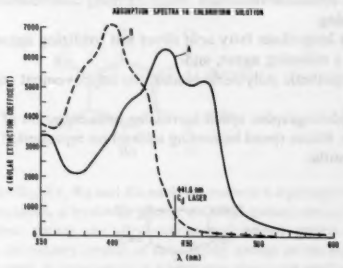
NOVEL ORTHO-QUINONE DIAZIDE PHOTORESIST SENSITIZERS

Daniel L. Ross, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

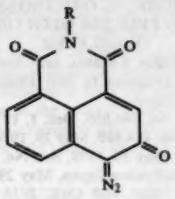
Filed Aug. 23, 1978, Ser. No. 936,038

Int. Cl.[2] G03C *5/00, 1/52;* C07C *113/00*

U.S. Cl. 430—165 12 Claims

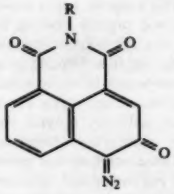


1. A compound which absorbs light in the range of about 400 to about 500 nanometers wavelength, of the formula



wherein R is an organic radical.

6. A photoresist composition comprising a mixture of an alkali soluble resin and a sensitizer compound which absorbs light in the range of about 400 to about 500 nanometers wavelength, of the formula



wherein R is an organic radical.

4,207,108

SILVER HALIDE PHOTOTHERMOGRAPHIC ELEMENT, COMPOSITION AND PROCESS

Gary L. Hiller, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 738,938, Nov. 4, 1976, abandoned. This application Feb. 13, 1978, Ser. No. 877,453

Int. Cl.[2] G03C *1/02, 5/30*

U.S. Cl. 430—354 **38 Claims**

1. In a photothermographic element comprising a support having thereon

(a) photosensitive silver halide, in reactive association with

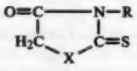
(b) an oxidation-reduction image-forming combination comprising

(i) a long-chain fatty acid silver salt oxidizing agent, with

(ii) a reducing agent, and

(c) a synthetic polymeric binder, the improvement comprising

(d) a photographic speed increasing concentration of a non-dye, thione speed increasing addendum represented by the formula:



wherein R is alkyl containing 1 to 8 carbon atoms, and X is O or S.

4,207,109

ELEMENT FOR PHOTOGRAPHIC USE CONTAINING CROSSLINKABLE POLYMERS HAVING ACRYLAMIDOPHENOL UNITS

Gerald A. Campbell, Webster; Kenneth R. Hollister, Pittsford, and Richard C. Sutton, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

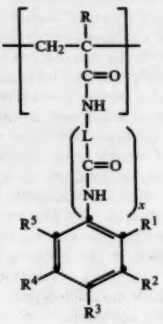
Filed Apr. 5, 1978, Ser. No. 893,557

Int. Cl.[2] G03C *1/78, 1/96, 1/68*

U.S. Cl. 430—536 **24 Claims**

1. An element comprising a support having coated thereon a layer comprising an addition copolymer; said copolymer consisting essentially of:

A. from about 0.5 to 50 percent by weight of a unit having the formula:



wherein:

x is 1 or 0,

R represents hydrogen or methyl,

L is a linking group, and

R^1 through R^5 are independently selected from the group consisting of hydrogen, hydroxy, alkyl from 1 to 6 carbon atoms and aryl from 6 to 10 carbon atoms; with the proviso that at least one of R^1 through R^5 is hydroxy and at least one of the positions ortho or para to said hydroxy has a hydrogen atom attached thereto; and

B. from about 50 to 99.5 percent by weight of units of at least one additional polymerized ethylenically unsaturated monomer.

4,207,110

DIAZOTYPE MATERIAL

Siegfried Scheler, and Heinz Schäfer, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 13, 1978, Ser. No. 951,247

Int. Cl.[2] G03C *1/52*

U.S. Cl. 430—173 **4 Claims**

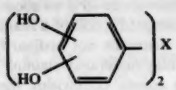
1. In a diazotype material comprising, in the light-sensitive layer, a diazo component and a coupling component which yields a black dyestuff image,

the improvement that the diazo component is a 2,5-dialkoxy-4-morpholino-benzene diazonium salt and the coupling component is a combination of

(a) 6-methoxy-2-hydroxy-3-naphthoic acid-N(ω-aminoalkyl)-amide as a blue coupler,

(b) a 2-alkyl- or 2-aryl-1,3-dihydroxybenzene or a cyanoacetoamide as a yellow coupler, and

(c) at least one compound of the general formula



wherein

x is zero, =S, =SO, or $=SO_2$, as a reddish-brown coupler,

the molar ratio of blue coupler to yellow coupler being in the range of about (0.7 to 0.9):1, and the molar ratio of blue coupler to reddish-brown coupler being in the range of about (6 to 12):1.

4,207,111

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Mitsuto Fujiwhara, Hachioji; Takashi Sasaki, Hino, and Takashi Uchida, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Nihonbashi-Muro, Japan

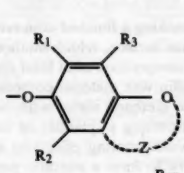
Filed Dec. 27, 1977, Ser. No. 864,229

Claims priority, application Japan, Dec. 28, 1976, 51-158449

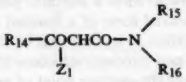
Int. Cl.[2] G03C *1/40, 7/00*

U.S. Cl. 430—376 **19 Claims**

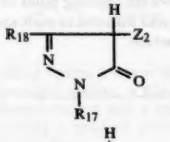
1. A color photosensitive material comprising a support and a silver halide photosensitive layer which material comprises a coupler represented by the following formulas (IV), (V) or (VI) having therein a group represented by formula (I), said coupler being capable of forming an azomethine dye on coupling with the oxidation product of an aromatic primary amine developer:



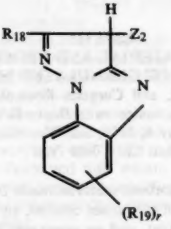
(I)



(IV)



(V)



(VI)

wherein R_1, R_2 and R_3 individually represent hydrogen, halogen, alkyl, alkenyl, cycloalkyl, aryl, alkoxy, alkenyloxy, cycloalkoxy, aryloxy, alkylthio, alkenylthio, cycloalkylthio, arylthio, acyl, acylamino, diacylamino, acyloxy, sulfonamido, or alkoxycarbonyl; and Z represents an atomic group necessary for forming a chroman or coumaran ring; R_{14} represents alkyl, pinanyl, bornyl, norbornyl, cycloalkyl, aryl, pyridyl, pyrazinyl, pyridazyl, quinonyl, thienyl, furanyl, thiazolyl, benzothiazolyl, oxazolyl, piperidyl, pyrrolyl, pyrrolinyl, tetrazolyl, thiazinyl, morpholino, furyl, benzooxazolyl, imidazolyl, benzoimidazolyl group; R_{15} and R_{16} represent individually hydrogen, alkyl or aryl; and Z_1 represents h hydrogen or a split-off group selected from the group consisting of halogen, —OZ′, —OCOZ′, —SZ′, —OCONHZ′, $—OSO_2NHZ′$, —NHCOZ′, $—NHSO_2Z′$, —NHZ′ (in which Z′ represents hydrogen, alkyl, aryl or a heterocyclic ring), $—SO_3H$, —SCN, azo and a heterocyclic ring containing nitrogen, oxygen and/or sulfur; R_{17} represents hydrogen, alkyl, alkenyl, norbornyl, cycloalkyl, aryl, pyridyl, pyrazinyl, pyridazyl, quinonyl, a thienyl, furyl, thiazinyl, morpholino, tetrazolyl, benzothiazolyl, thiazolyl, benzoxazolyl, oxazolyl, benzimidazolyl, imidazolyl group, piperidyl, pyrrolyl, pyrrolinyl, naphthoxazolyl; and R_{18} represents alkyl, aryl, alkenyl, norbornyl, alkoxy, amino, ureido, pyridyl, pyrazinyl, pyridazyl, quinonyl, thienyl, furyl, thiazinyl, morpholino, tetrazolyl, benzothiazolyl, thiazolyl, benzoxazolyl, oxazolyl, benzimidazolyl, imidazolyl, piperidyl, pyrrolyl, pyrrolinyl, and napthoxazolyl; R_{19} represents hydrogen, halogen, alkyl, alkoxy, acylamino, carbamoyl or sulfamoyl; r represents 1–4; and Z_2 represents Z_1.

4,207,112

HEAT DEVELOPABLE LIGHT-SENSITIVE MATERIALS

Shinpei Ikenoue; Takao Masuda, and Shinichi Sakawaki, all of Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

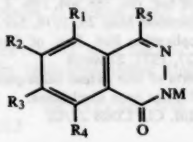
Filed Nov. 3, 1975, Ser. No. 628,675

Claims priority, application Japan, Nov. 1, 1974, 49-12671

Int. Cl.[2] G03C *1/02, 5/24, 1/48, 1/87*

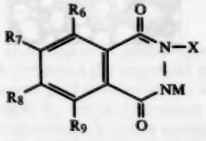
U.S. Cl. 430—566 **10 Claims**

1. In a heat-developable light-sensitive material which has on the support thereof at least one layer containing at least (a) an organic silver salt, (b) a light-sensitive silver halide or a light-sensitive silver halide-forming component, (c) a reducing agent and (d) phthalazinone, the improvement which comprises the light-sensitive material further having on the surface of the support opposite to said layer a second layer containing at least one compound selected from the group consisting of compounds represented by the formulae:



(A)

wherein R_1, R_2, R_3 and R_4 each represents a hydrogen atom, a halogen atom, an alkyl group, an alkoxy group, a nitro group, an amino group or a hydroxy group and R_5 represents a hydrogen atom, an alkyl group, an alkoxy group, an aryl group, a pyridyl group or a vinyl group and M is a monovalent metal ion,



(B)

wherein R_6, R_7, R_8 and R_9 each represents a hydrogen atom, a halogen atom, a hydroxy group, an alkyl group, an aryl group, an amino group, an alkyl-substituted amino group, a nitro group, an alkoxy group, a thioalkoxy group or an acylamide group, and X represents a hydrogen atom, an aryl group, a pyridyl group, a 2-(2-pyridyl)ethyl group, a 2-(4-pyridyl)ethyl group, a benzoyl group or a methyl group and M is a monovalent metal ion, and

wherein Z represents an atomic group necessary to complete a heterocyclic ring and M is a monovalent metal ion.

4,207,113

INORGANIC FOAM AND PREPARATION THEREOF

Akira Yoshino, Yokohama, and Isamu Iwami, Zushi, both of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Dec. 7, 1977, Ser. No. 858,425
Claims priority, application Japan, Dec. 17, 1976, 51/150815
Int. Cl.² C04B *21/00*
U.S. Cl. 106—40 R **18 Claims**

1. An inorganic foam comprising metallic salts of phosphoric acid, being characterized in that:

(a) the ratio of the total number of metal atoms constituting said salts to that of phosphorus atoms is in the range from ⅔ to 2/1;

(b) the metal constituting said salts comprises at least one polyvalent metal and the equivalent ratio of the total valences of the metal relative to the total valences of phosphate ion is from 0.65 to 0.95;

(c) said foam consists of discrete cells with an average diameter of 3 mm or less; and

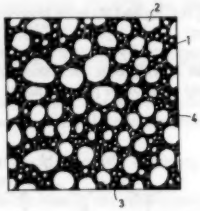
(d) said foam has a specific gravity of 0.15 or less.

4,207,114

FOAMED CERAMIC ELEMENT AND PROCESS FOR MAKING SAME

Peter Schuster, Mannheim-Neu-Edingen, and Bernd von Chiari, Rödental, both of Fed. Rep. of Germany, assignors to Schneider GmbH & Co., Frechen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 765,304, Feb. 3, 1977, Pat. No. 4,123,285. This application May 26, 1978, Ser. No. 910,028
Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 2604793; May 27, 1977, 2724010
The portion of the term of this patent subsequent to Oct. 31, 1995, has been disclaimed.
Int. Cl.² C04B *21/02*
U.S. Cl. 106—40 R **45 Claims**



1. Foamed ceramic element formed from clay-mineral raw materials comprising a body portion which includes a pore distribution having two maxima, the first maximum is formed by the average diameter of large pores, the second maximum is formed by the average diameter of the smaller pores, said smaller pores permeate the solid web between the large pores, said solid web further including microscopic cracks which partially interconnect the large and small pores thereby providing an open porosity, said foamed ceramic element having (C) improved fire resistant characteristics and a water absorption characteristic of from about 10% to about 25%.

34. Process for the production of a foamed ceramic element from mineral raw materials not ordinarily capable of being swelled, including clay-mineral-containing raw materials, with or without fluxing agents, comprising the steps of admixing said mineral raw material with a sulfate and sulfide foaming adjuvant and water, drying the mixture to be foamed and then placing the dried mixture into molds prior to foaming, heating the mixture at about 1000° C. or more until foaming occurs, and subsequently cooling the foamed ceramic, and said foaming adjuvant is added in a ratio of sulfate:sulfide of between about 10:1 to 1:1.

45. A foamed ceramic element of lightweight construction made in accordance with the process of claim **34** characterized as having a crystalline phase of at least about 10 percent by weight, a water absorption characteristic nearly zero, a diffusion resistance factor which is practically infinite, a thermal conductivity of between about 0.08 to about 0.2 kcal/m·h·°C.

4,207,115

INTERNAL SEALANT FOR CONCRETE

Werner R. Boehme, Glen Ellyn, and Albert J. Schlaeger, Skokie, both of Ill., assignors to Fats & Proteins Research Foundation, Inc., Des Plaines, Ill.

Filed Dec. 20, 1978, Ser. No. 971,247
Int. Cl.² C04B *37/355*
U.S. Cl. 106—95 **7 Claims**

1. The method of making a finished concrete structure having a water-impervious surface, which method comprises the steps of: preparing a composition of at least one glyceryl fatty acid ester and a paraffin wax material composed primarily of solid members of the methane series with boiling points in excess of 300° C.; dispersing a quantity of said composition sufficient to afford waterproofing effects in a wet hydraulic Portland cement slurry to form a mixture; pouring the resultant mixture to the desired form of a finished concrete structure; allowing said mixture to hydrate and harden; and heating the surface region of said concrete structure to a temperature below 85° C. and above the melting point of said composition whereby to cause the wax material to melt and fill the capillary interstices in said structure.

4,207,116

GRANULATED MATERIAL AND PROCESS FOR THE PRODUCTION OF GRANULATED MATERIALS

Karl Been, Santpoort, and Cornelis Bontenbal, Ijsselmuiden, both of Netherlands, assignors to Bepro B.V., Netherlands

Filed May 4, 1978, Ser. No. 902,664
Int. Cl.² C04B *7/02*
U.S. Cl. 106—97 **22 Claims**

1. A granulated absorbent material made from a mixture of dry constituents which comprises cement, an inorganic water-absorbing swelling agent, and an aggregate comprising sand, ground stone or a mixture of sand and ground stone, together with water, the weight ratio of the cement to the total of the sand and ground stone being in the range of from approximately 55:45 to approximately 65:35, the ratio of water-absorbing swelling agent to water being such that a mixture of those constituents has a viscosity in the range of from 15 to 25 centipoises at 20° C., and the quantity of water being in the range of from 60 to 120% by weight of the quantity of said dry constituents.

4,207,117
ASPHALTIC COMPOSITIONS

Wilton F. Espenscheid, Princeton, and Tsoung Y. Yan, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

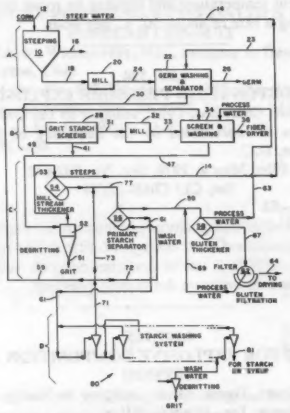
Filed Oct. 17, 1975, Ser. No. 623,273
Int. Cl.[2] C08L *95/00*
U.S. Cl. 106—278 4 Claims

1. An asphaltic composition consisting essentially of asphalt having an ASTM viscosity grade of AC-10 and a ductility improving amount of a refinery stream obtained in the form of a bottoms fraction from a thermofor catalytic cracking or fluid catalytic cracking operation characterized by an initial boiling point of about 750° F. wherein said bottoms fraction is present in an amount of from about 0.5% to about 45% by weight of the total weight of said asphaltic composition.

4,207,118
CORN WET MILLING SYSTEM AND PROCESS FOR MANUFACTURING STARCH

Laszlo Bonnyay, Moraga, Calif., and James C. Elsken, Stamford, Conn., assignors to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,692
Int. Cl.[2] C13L *1/02, 1/06*
U.S. Cl. 127—24 5 Claims



4. A corn wet milling system for manufacturing starch comprising a germ separation station, a fiber washing station, a starch-gluten separation station and a starch washing station for successively treating a product stream, the starch-gluten separation station comprising

(1) a mill stream thickener centrifuge with a first conduit connecting said fiber washing station with said mill stream thickener centrifuge for conducting the entire mill stream to said thickener centrifuge,

(2) a primary starch separator centrifuge for separating starch from gluten with a second conduit connecting said thickener centrifuge with said separator centrifuge to conduct the thickened mill stream from said thickener centrifuge to said separator centrifuge, conduit means for passing a starch-rich product stream to said starch washing station, and

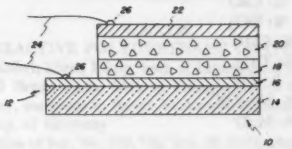
(3) a gluten thickener centrifuge adapted to receive the gluten-containing product stream of said primary starch separator centrifuge,

a dilution water conduit conducting at least a portion of the low-solubles overflow of said starch washing station to said primary starch separator to dilute the thickened mill stream feed, a third conduit conducting a second portion of said low-solubles overflow to said fiber washing station as wash water therefor and a fourth conduit conducting a third portion of said low solubles overflow to said primary starch separator as wash water.

4,207,119
POLYCRYSTALLINE THIN FILM CDS/CDTE PHOTOVOLTAIC CELL

Yuan-Sheng Tyan, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 2, 1978, Ser. No. 911,843
Int. Cl.[2] H01L *31/06*
U.S. Cl. 136—89 TF 31 Claims



1. In a photovoltaic cell comprising

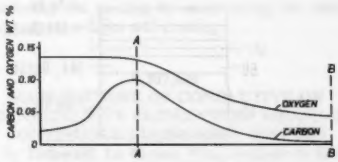
first and second contiguous crystalline layers containing, respectively, p-type cadmium telluride and n-type cadmium sulfide, and electrodes in operative, low-impedance contact with at least part of said layers,

the improvement wherein both said cadmium telluride and said cadmium sulfide are polycrystalline, and together said layers contain oxygen atoms in an amount that is effective to produce a cell having a conversion efficiency that is enhanced over the conversion efficiency of a cell that is produced without said oxygen atoms present.

4,207,120
PRODUCTION OF METAL COMPACTS

Brian M. Armstrong, and Kenneth J. King, both of Sheffield, England, assignors to British Steel Corporation, London, England

Filed Nov. 13, 1978, Ser. No. 960,027
Claims priority, application United Kingdom, Nov. 15, 1977, 47450/77
Int. Cl.[2] C21D *1/48*
U.S. Cl. 148—16.5 6 Claims



1. A method of continuously producing a stainless steel strip compact which comprises the sequential steps of compacting as atomised stainless steel powder having a carbon content no greater than 0.06% by weight to produce a green strip compact, through-carburising the green compact to disperse carbon uniformly around the boundaries of the powder particles which make up the compact so increasing the carbon content of the compact to a level in excess of that required in the finished product, and heat treating the through-carburised green compact in a reducing atmosphere to promote chemical reaction between the carbon and oxygen present in the compact to reduce the former to a level not exceeding 0.03% by weight and the latter by a factor of at least two.

4,207,121
HIGH PERFORMANCE FUSED FLUX FOR SUBMERGED ARC WELDING

Masahiro Nakabayashi, Jefferson, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Dec. 6, 1978, Ser. No. 965,261
Int. Cl.[2] B23K *35/34*
U.S. Cl. 148—26 7 Claims

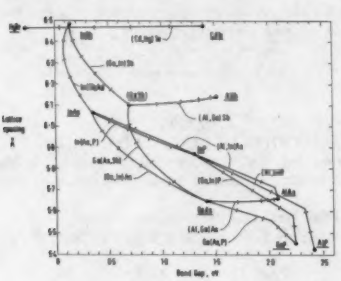
1. A fused flux for submerged arc welding of high strength, low-alloy pipe steels, using AC, DC or multiple AC electrodes; characterized in that the flux is amorphous and non-powdery and capable of producing low oxygen content weld metal having a high impact strength even at low temperatures, the flux consisting essentially of:

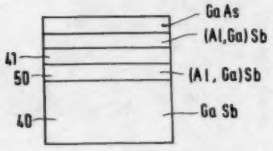
20–60 wt. %: CaO
15–55 wt. %: SiO_2
5–10 wt. %: CaF_2
5–15 wt. %: TiO_2
0–5 wt. %: Al_2O_3
3–15 wt. %: Na_3AlF_6
5–30 wt. %: MgO

4,207,122
INFRA-RED LIGHT EMISSIVE DEVICES

Colin H. L. Goodman, Loughton, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 1, 1978, Ser. No. 965,551
Int. Cl.[2] H01L *27/14, 29/205, 21/208*
U.S. Cl. 148—33.4 8 Claims





1. An infra-red light emissive device comprising:

a substrate of GaSb of a first conductivity type;

an active layer of $In(Sb_{1-y}As_y)$ of a second conductivity type grown on said substrate, wherein y is selected such that lattice spacing of said layer of $In(Sb_{1-x}As_x)$ is substantially the same as the lattice spacing of said substrate of GaSb; and

a first layer of $(Al_xGa_{1-x})Sb$ of the second conductivity type grown on said active layer of $In(Sb_{1-y}As_y)$ wherein x is selected such that refractive index of said layer of $(Al_xGa_{1-x})Sb$ is lower then the refractive index of said active layer of $In(Sb_{1-x}As_x)$.

4,207,123
COATINGS FOR REDUCED LOSSES IN (110) [001] ORIENTED SILICON IRON

William T. Reynolds, McMurray, and Karl Foster, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 883,439, Mar. 6, 1978, Pat. No. 4,165,990, which is a continuation of Ser. No. 382,266, Feb. 24, 1973, abandoned. This application Dec. 18, 1978, Ser. No. 970,777
Int. Cl.[2] H01F *1/04*
U.S. Cl. 148—113 2 Claims

1. In the method of improving the core loss characteristics in a silicon steel in which a major portion of the grains have an orientation of (110) [001] in terms of Miller indicies, the steps comprising, applying to the surface of the steel of finish gauge thickness a coating consisting essentially of from about 15% to about 80% iron oxide, up to 40% SiO_2 and the balance of at least 20%, essentially MgO, said coating having a thickness within the range between about 0.1 and 0.5 mil per side, heating the coated steel to a temperature within the range between about 1100° C. and about 1300° C., holding the steel at said temperature for a time period of between about 12 hours and about 36 hours to fuse the coating to the steel surface, to transform the steel so that a major portion of the grains assume a (110) [001] orientation and to decarburize the steel, and thereafter cooling the steel to room temperature, said heating to the heat treatment temperature and cooling to room temperature not exceeding a rate of about 50° C. per hour.

4,207,124
HIGH DETONATION PRESSURE EXPLOSIVES

Karl O. Christe, Calabasas, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 4, 1978, Ser. No. 902,642
Int. Cl.[2] C06B *25/34*
U.S. Cl. 149—92 7 Claims

1. An explosive composition comprising an explosive organic nitro compound, and enough of a dense inorganic oxidizer having an NF_4+ ion in conjunction with said organic nitro compound to improve detonation pressure.

4,207,125
PRE-MIX FOR EXPLOSIVE COMPOSITION AND METHOD

Charles H. Grant, Tower, Minn., assignor to Energy Sciences and Consultants, Inc., Biwabik, Minn.

Filed Aug. 7, 1978, Ser. No. 931,485
Int. Cl.[2] C06B *23/00*
U.S. Cl. 149—109.4 12 Claims

1. A method of preparing slurry explosive compositions containing distinct, liquid and particulate phases, which method comprises the steps of: compounding at a first location remote from a site of possible use, a long term storable non-explosive detonation insensitive liquid phase pre-mix having a stable viscosity; subsequently transporting said pre-mix to a second location in the vicinity of the site of possible use; and subsequently dispersing at said second location the particulate phase into said liquid phase by simple mechanical mixing techniques and thereby forming a slurry explosive mixture in the vicinity of the site of composition use.

6. A non-explosive detonation insensitive storeable non-gelled thick liquid phase pre-mix composition with comparatively stable viscosity for subsequent use in preparing a slurried explosive upon being combined with additional material, which pre-mix composition comprises, on a weight basis: (a) from about 30% to 50% water, (b) from about 10% to 50% of an inorganic oxidizing salt, (c) up to about 20% of a liquid, organic fluid extender, (d) from about 0.5% to about 2.0% of a thickening agent consisting essentially of a non-self cross-linking thickener, said composition being free of any self cross-linking thickener.

4,207,126
WATERGEL EXPLOSIVES CONTAINING MICROSPHERES

Gunnar O. Ekman, Nora, Sweden, assignor to Nitro Nobel AB, Gyttorp, Sweden

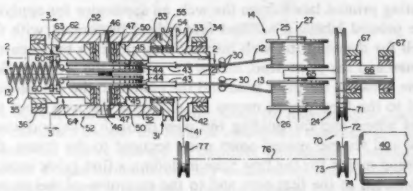
Filed Nov. 24, 1978, Ser. No. 963,208
Claims priority, application Sweden, Dec. 15, 1977, 7714240
Int. Cl.² C06B *23/00*
U.S. Cl. 149—109.6 **2 Claims**

1. A process, satisfying rigorous demands for safety, for the manufacture of water gel explosives with improved performance characteristics, which explosives contain combustible materials, oxidizing agents, a gelling agent, water, sensitizers, and expanded thermoplastic microspheres as gas carriers, the improvement comprising carrying out the process in a succession of steps; including a first step of expanding the microspheres in a concentrated solution or eutectic melt consisting of part of the salts intended as components of the finished explosive, providing an oxygen balance in said solution or melt which does not make said solution or melt a safety risk at the temperature required for the expansion of the microspheres; and admixing at a lower temperature acceptable from a safety point of view the maintaining components of the explosive including the sensitizer.

4,207,127
METHOD OF PRODUCING A CONTINUOUS FLEXIBLE TUBULAR CONDUIT

Philip K. Loyer, Waynesville, N.C., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 857,739, Dec. 5, 1977, Pat. No. 4,135,869. This application Sep. 18, 1978, Ser. No. 943,424
Int. Cl.² B29D *23/05*; B29F *3/00*
U.S. Cl. 156—50 **4 Claims**



1. A method of producing a continuous flexible tubular conduit having a plurality of helically wound reinforcing-electrical wires comprising the steps of; forming said wires into a corresponding plurality of substantially identical continuous non-rotating helical coils; providing an extruder head having an opening for receiving said coils therethrough; moving said coils through said opening with the coil turns of said coils coaxially aligned and alternately arranged in a rectilinear path substantially coinciding with said coaxial alignment; and extruding a polymeric tube around said coils in said head to define said conduit; said forming step comprising the steps of; rotatably supporting a plurality of wire feed spools on a support assembly with each of said spools having an associated one of said plurality of wires wound thereon; providing a plurality of feed wheels for feeding said wires from said spools, each of said feed wheels having a peripheral recess therein for receiving a wire from its associated feed spool; twisting said wires as they exit said feed wheels to define said plurality of non-rotating helical coils in a continuous manner around an axis substantially coinciding with said rectilinear path, said twisting step comprising twisting each of said wires concentrically around said axis with an associated set of wire forming rollers wherein each set of rollers consists of a plurality of external wire-forming rollers and at least one internal wire-forming roller with said external wire forming rollers being disposed in angularly spaced relation around said axis, each of said sets of rollers defining non-rotating helical coils in each wire as it exits its associated feed wheel, and placing said sets of wire-forming rollers in axially spaced relation along said axis and rectilinear path; rotating said support assembly and feed spools about said axis to assure said wires are free of entanglements during twisting thereof; and correlating with a control device said feeding of wires from said spools and said twisting thereof, said rotating of said support assembly, and said moving of said coils in said rectilinear path through said opening; said step of rotating said support assembly and its feed spools and said step of moving said coils are both achieved in a simultaneous manner with a common drive operatively connected to said support assembly and to said moving means, said common drive being connected to said control device to enable achievement of said correlating step.

4,207,128
REACTIVE POLYURETHANE COATINGS

Harro Träubel; Klaus König, both of Leverkusen; Hans J. Müller, and Bruno Zorn, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

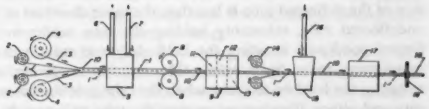
Continuation of Ser. No. 616,736, Sep. 25, 1975, abandoned. This application Oct. 22, 1976, Ser. No. 734,857
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1974, 2448133
Int. Cl.² B32B *31/26*
U.S. Cl. 156—77 **5 Claims**

1. A process for the production of microporous coatings comprising:
(a) mixing an NCO-prepolymer prepared from polyisocyanates with compounds containing at least two isocyanate-reactive hydrogen atoms with about 3 to 40% by weight, based on the NCO-prepolymer, of a substantially inert, with respect to isocyanate groups, viscosity-reducing, non-migrating liquid organic compound miscible with said NCO-prepolymer as a plasticizer, wherein
(i) said NCO-prepolymer is used free from solvents, has a viscosity of more than about 500 cP at 25° C. and a molecular weight of from about 300 to 20,000,
(ii) said plasticizer has a volatility of less than 10% weight loss after storage for 72 hours at 90° C., and
(iii) the resultant NCO-prepolymer-plasticizer mixture has a viscosity of less than about 15,000 cP at 20° C.,
(b) dispersing 3 to 300% by weight of water, based on the NCO-prepolymer, into the NCO-prepolymer-plasticizer mixture to form a water-in-oil emulsion,
(c) adding a polyamine to the water-in-oil emulsion in a quantity substantially equivalent to the isocyanate groups.
(d) applying a coating of the water-in-oil emulsion to a substrate and
(e) hardening the coating by evaporating the chemically unbound water from said coating.

4,207,129
MANUFACTURE OF CONDUCTIVE OR SEMI-CONDUCTIVE ELEMENTS BY MEANS OF A CONTINUOUS PULTRUSION PROCESS

Thomas D. Tadewald, La Crosse, Wis., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 853,061, Nov. 21, 1977, abandoned. This application Apr. 5, 1979, Ser. No. 27,430
Int. Cl.² B29D *9/08*
U.S. Cl. 156—242 **12 Claims**



1. A method for the continuous pultrusion of a shaped con-

ductive or semi-conductive element which comprises the steps of:

(a) admixing at least one conductive or semi-conductive powder possessing a conductivity at ambient temperature of from about 10^{-8} to about 10^{2} inverse ohm centimeters with a thermosetting polymeric resin;

(b) applying said admixture to a support material to form a sheet;

(c) placing conductive buss bars in juxtaposition between at least two of said sheets to form a conductive or semi-conductive element;

(d) subjecting said element to a B-stage cure at a temperature in the range of from about ambient to about 400° F. to effect the formation of a semi-cured element;

(e) reinforcing said element by adding thereto at least one layer of glass rovings;

(f) encapsulating the reinforced element by passing said element through a bath of encapsulating thermoplastic or thermosetting resin;

(g) pulling said encapsulated conductive or semi-conductive element through a heated die possessing a temperature gradient within said die of from about 100° to about 400° F. to effect the desired physical shape of said encapsulated conductive or semi-conductive element; and

(h) recovering said shaped encapsulated conductive or semi-conductive element.

4,207,130

LINING OF PASSAGEWAYS

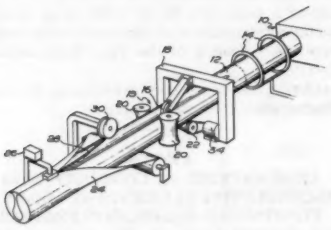
Bernard Barber, Hastings, England, assignor to Trio Engineering Limited, Georgetown, Cayman Islands

Filed Jul. 26, 1978, Ser. No. 928,276

Claims priority, application United Kingdom, Jul. 27, 1977, 31628/77

Int. Cl.[2] **B29C** *17/07;* **B29D** *23/04*

U.S. Cl. 156—244.13 **16 Claims**



1. A method of lining a passageway comprising extruding a tubular liner of plastics at the site of the passageway to be lined, such liner being of such a resiliency that it can be flexed but will return or tend to return to the unflexed condition when released, deflecting the tubular extrudate while the extrusion continues to a condition in which the largest diameteral dimension of the deflected tube is less than the outer diameter of the undeflected tube, releasably holding the tube whilst in deflected condition, inserting the held, deflected tube into the passageway to be lined, while the extrusion continues, and releasing the hold on the tube when the tube is in the passageway and either allowing or causing the tube to return to its initial undeflected condition.

4,207,131

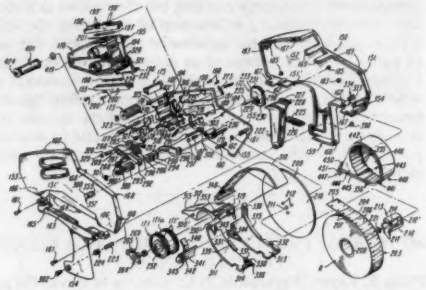
APPARATUS FOR PRINTING AND APPLYING PRESSURE SENSITIVE LABELS

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 476,744, Jun. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,445, Jul. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Feb. 17, 1976, Ser. No. 658,193

Int. Cl.[2] **B41F** *21/00*

U.S. Cl. 156—384 **14 Claims**



1. Apparatus for printing and applying pressure sensitive labels carried on a web of supporting material, comprising: a frame, means carried by the frame for mounting a supply roll of labels, a platen and a cooperable print head mounted on the frame, the platen having an extension, a delaminator for delaminating printed labels from the web, an applicator for applying the printed labels, a toothed feed wheel in contact with the web for drawing the web into printing position between the platen and the print head, means for guiding the web to a first zone between the print head and the platen, to the deliminator and to the feed wheel, means for stripping the web from the feed wheel and for guiding the web through a second zone, first and second spaced-apart posts secured to the frame, the guiding means for the first zone including a first guide section connected to the first post and to the extension of the platen, and the stripping and guiding means for the second zone including a separate second guide section connected to the first and second posts and a separate third guide section interlocked with second guide section and connected to first and second posts.

4,207,132

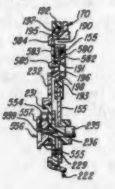
HAND-HELD LABELER

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 817,086, Jul. 18, 1977, Pat. No. 4,125,421. This application Feb. 27, 1978, Ser. No. 882,016

Int. Cl.[2] **B32B** *31/00*

U.S. Cl. 156—384 **2 Claims**



1. Hand-held apparatus for printing and applying pressure

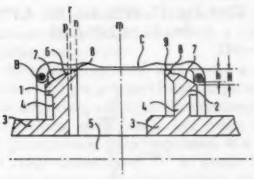
sensitive labels carried on a web of supporting material, comprising: a frame having a handle, an actuator disposed at the handle and movable between an initial and an actuated position, a platen, a print head, means mounting the print head on the frame for movement into and out of printing cooperation with the platen, means disposed adjacent the platen for delaminating printed labels from the supporting material web, means disposed adjacent the delaminating means for applying printed labels, a driver for advancing the web, means including a drive mechanism for driving the print head into cooperation with the platen and for thereafter driving the feed wheel to advance the just printed label into label applying relationship with respect to the applying means, the frame including a housing and a frame plate secured to the housing, the frame plate including a pair of cutouts spaced by a frame plate section, a pair of ball tracks adjacent each cutout for mounting the print head, ball bearings in each pair of ball tracks, the frame plate section being straddled by a pair of members on the print head to prevent the print head from being dislocated due to apparatus being impacted.

4,207,133

TIRE-BUILDING DRUM

Franco Bottasso, Milan, and Giorgio Bertoldo, Arese, both of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 22, 1978, Ser. No. 889,021
Claims priority, application Italy, Mar. 31, 1977, 21872 A/77
Int. Cl.[2] B29H *17/16*
U.S. Cl. 156—415 **5 Claims**



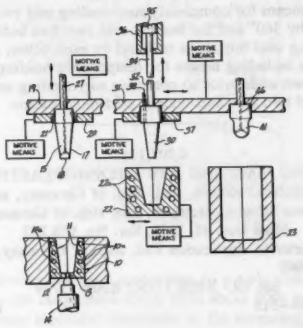
1. An expandable tire-building drum for making toric shaped tire carcasses built in the form of cylindrical sleeves, each said cylindrical sleeve having at opposite extremities, respective annular bulges circumferentially inextensible and radially developed towards the sleeve interior forming the beads of the carcass, the height of the beads being one-half of the difference between the internal diameter of the said sleeve and the internal diameter of said beads, said drum comprising two co-axial discs, each comprising a hub and an annular flange fixed to the hub, said discs being axially slidable reciprocally and fixed with each other in rotation, said discs being supported by a rotating shaft which projects in cantilever fashion from a driving device, each of said discs further comprising: a radially external surface comprising a first part having a truncated conical shape and capable of receiving a respective bead of the sleeve and acting as a bead-seat; an annular co-axial ridge of a predetermined height having an external diameter greater than the diameter of said beat-seat and being disposed alongside said seat on the innermost portion of said flange, said annular ridge projecting in cantilever fashion from said disc axially towards the drum interior such that a plane perpendicular to said drum axis and tangent to the axial inside border of said annular ridge is axially innermost of a plane perpendicular to the drum axis and tangent to the axially inner surface of the said annular flange, the height of said annular co-axial ridge being less than the height of said beads; and, a second part having a form of a truncated cone that converges axially outside said drum, coinciding also along its axial inner border, with the axially outer border of said bead-seat, the difference between the value of the greater diameter of the said annular ridge and the value of the lesser diameter of said truncated cone, being greater than twice the value of the said bead height, the truncated cone having a surface which is knurled, wherein said knurling procedures blocks of material, the radially external surfaces of which are smooth.

4,207,134

APPARATUS FOR THE PREPARATION OF HOLLOW PLASTIC ARTICLES

Emery I. Valyi, 5200 Sycamore Ave., Riverdale, N.Y. 10471

Continuation-in-part of Ser. No. 641,638, Dec. 17, 1975, Pat. No. 4,115,494, which is a division of Ser. No. 479,287, Jun. 14, 1974, Pat. No. 3,970,419, which is a continuation-in-part of Ser. No. 473,580, May 28, 1974, Pat. No. 3,966,378. This application Jun. 1, 1978, Ser. No. 911,359
The portion of the term of this patent subsequent to Jun. 29, 1993, has been disclaimed.
Int. Cl.[2] B32B *1/00*; B29D *3/00*; B29C *17/07*
U.S. Cl. 156—423 **20 Claims**



1. An apparatus for forming objects of moldable organic plastic material which comprises: a first core and a first mold spaced from each other wherein said first core and first mold are engageable with each other; means for providing a parison on said first core engageable with said first core at a location spaced from the location wherein said first mold and first core are engageable with each other; means including said first core to place said parison in said first mold; means associated with said first core for separating said parison from said first core while retaining said parison in said first mold to adjust the temperature thereof; a second core and a second mold in spaced relationship to said first core and first mold, respectively, wherein said second core is reciprocable into and out of engagement with said second mold and wherein said second mold is stationary; means for engaging said second core and first mold with parison retained therein at a location spaced from said second mold whereby said parison is transferred to said second core; means for moving said second core and parison retained thereon into engagement with said second mold at a location spaced from said first mold; and means associated with said second core to expand said parison on said second core in said second mold to provide a finished article.

4,207,135

KIT APPARATUS FOR MAKING O-RINGS

Robert J. Pavano, Bridgewater, N.J., assignor to P.E.P. Associates, Somerville, N.J.

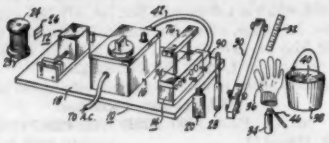
Filed Jun. 24, 1977, Ser. No. 809,888
Int. Cl.[2] B29C *27/06*; B65H *69/02, 69/06*
U.S. Cl. 156—502 **28 Claims**

1. A kit for making O-rings from flexible, elastic O-ring cord stock material, said kit comprising:

a continuously adjustable holding means for clamping and locking two portions of a continuous piece of said flexible, elastic O-ring cord stock material in side-by-side relationship so that said continuous piece of cord material can be simultaneously cut at two different locations into a prede-

termined length having two diagonally cut and exactly complementary matching free butt ends, said holding means further including means for making the angle of said cut more perpendicular to the length of said cord stock material for cord stock materials of larger diameter than for cord stock materials of smaller diameter;

a bonding liquid for application to said two free butt ends; and,



a mold means for completely surrounding said two free butt ends by 360° and for heating said two free butt ends and causing said butt ends to bond to each other, said mold means including means for temporarily holding said two free butt ends prior to complete surrounding and heating of said two free butt ends in said mold means.

4,207,136

WELDING MACHINE FOR THERMOPLASTIC WEB

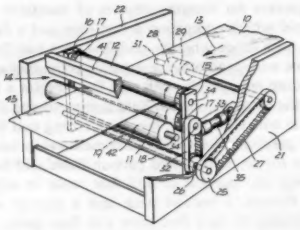
Ehrhart Schulze, Fellbach, Fed. Rep. of Germany, assignor to Karl Heinz Stiegler, Stuttgart, Fed. Rep. of Germany

Filed Dec. 11, 1978, Ser. No. 968,203

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1977, 2755860

Int. Cl.[2] **B32B** *31/00*; **B30B** *15/34*

U.S. Cl. 156—515 **10 Claims**



1. Machine for producing welds on a thermoplastic web comprising an intermittently operating feed mechanism for feeding said web in successive feeding steps; a welding station effective during standstill of said web between two feeding steps to weld said web and separate it from its end which is advanced beyond the welding station and means for displacing said feed mechanism and the web therein in the feeding direction between a first position and a second position.

4,207,137

METHOD OF CONTROLLING A PLASMA ETCHING PROCESS BY MONITORING THE IMPEDANCE CHANGES OF THE RF POWER

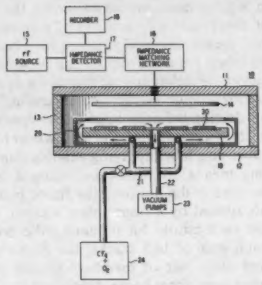
Angelo R. Tretola, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murry Hill, N.J.

Filed Apr. 13, 1979, Ser. No. 29,674

Int. Cl.[2] **H01L** *21/306*

U.S. Cl. 156—627 **14 Claims**

1. A method of etching a selected area of a layer (33 of FIG. 2) formed over a body (31) comprising the steps of placing the body in a chamber (10 of FIG. 1) between electrode means (14 and 19), introducing a reactant gas into said chamber, and supplying power to said electrodes so as to create a plasma in said chamber capable of etching said layer, characterized in that the impedance change of the plasma is monitored during the etching reaction and the power to the elecrodes means is



turned off at a predetermined time with respect to the point where the impedance change essentially reaches zero.

4,207,138

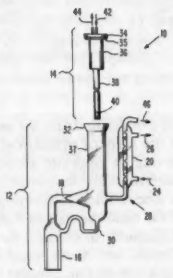
MERCURY VAPOR LEACHING FROM MICROELECTRONIC SUBSTRATES

Thomas T. Hitch, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jan. 17, 1979, Ser. No. 4,177

Int. Cl.[2] **C23F** *1/00*

U.S. Cl. 156—642 **10 Claims**



9. A method for leaching metals from a substrate comprising:

heating mercury to a temperature sufficient to form a mercury vapor;

passing the mercury vapor through an orifice to form a mercury vapor jet with a temperature of at least about 65° C. to about 150° C. measured just prior to the mercury vapor striking said substrate and an expansion in width of said jet of less than about 4.0 mm per centimeter traveled; and

contacting said substrate with said mercury vapor jet, at an angle which is substantially perpendicular with respect to the center of said mercury vapor jet, for a sufficient time to dissolve the mercury soluble metal from said substrate, wherein the substrate temperature is at least about 40° C. cooler than the temperature of the mercury vapor jet and at a residual gas pressure less than or equal to about 10^{-2} Torr.

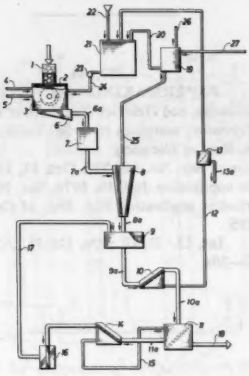
10. The method according to claim 9 further comprising:

collecting, reheating and forming a mercury vapor jet with the mercury which is condensed on said substrate.

4,207,139
METHOD FOR PRODUCING GROUNDWOOD PULP

Pekka O. Haikkala, Tampere, Finland, and Jonas A. I. Lindahl, Domsjö, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 25, 1978, Ser. No. 954,714
Claims priority, application Sweden, Feb. 16, 1978, 7801814
Int. Cl.[2] D21B 1/16
U.S. Cl. 162—23 8 Claims



1. A process for the production of groundwood pulp of improved brightness and strength, and with a relatively low energy requirement, comprising:

(1) grinding debarked pulpwood logs under a superatmospheric pressure of a gas selected from the group consisting of steam, air and steam and air while continuously supplying thereto process white water and water separated in thickening groundwood pulp suspension at a temperature within the range from about 75° to about 100° C., and forming a pulp suspension in the resulting aqueous liquor;

(2) centrifugally separating steam from the pulp suspension, and using the separated steam to heat the water supplied to the grinding;

(3) thickening the pulp suspension to a pulp concentration within the range from about 5 to about 40% and supplying water separated therefrom to the grinding;

(4) diluting the thickened pulp and screening the diluted pulp suspension;

(5) thickening the screened rejects suspension to a pulp concentration of at least 10% and defibrating the screened rejects suspension in a refiner, recycling the screened rejects suspension to the from-steam-separated pulp suspension (2); and

(6) mixing the recycled, thickened and refined rejects suspension, having a pulp concentration of at least 8%, with the pulp suspension from step (2) thereby increasing the pulp concentration of the from-steam-separated pulp suspension from step (2), facilitating its thickening in step (3).

4,207,140
METHOD OF PRODUCING GROUNDWOOD PULP

Jonas A. I. Lindahl, Domsjö, Sweden, assignor to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Filed Oct. 25, 1978, Ser. No. 954,715
Claims priority, application Sweden, Feb. 16, 1978, 7801813
Int. Cl.[2] D21B 1/16
U.S. Cl. 162—23 16 Claims

1. A process for preparing groundwood pulp of improved quality and with reduced energy requirements, which comprises:

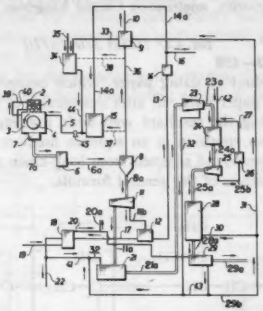
(1) grinding debarked pulpwood logs under a superatmospheric pressure of a gas selected from the group consisting of steam, air and steam and air while continuously supplying thereto water and spent bleaching liquor at a temperature of at least 70° C. and forming a pulp suspension in the resulting aqueous liquor;

(2) centrifugally separating steam from the pulp suspension and using the separated hot steam to heat the spent bleaching liquor supplied to the grinding;

(3) thickening the pulp suspension to a pulp concentration within the range from about 5 to about 40% and supplying water separated therefrom to the grinding;

(4) diluting the pulp suspension to a pulp concentration within the range from about 0.5 to about 4.0%;

(5) screening the pulp suspension;



(6) thickening the pulp suspension to a pulp concentration within the range from about 10 to about 50% and supplying water separated therefrom to the screening;

(7) adding bleaching chemicals thereto and bleaching the pulp;

(8) diluting the bleached pulp with spent bleaching liquor to a pulp concentration within the range from about 1 to about 6%;

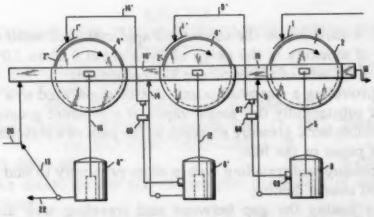
(9) thickening the bleached pulp suspension to a pulp concentration within the range from about 10 to about 50%; and

(10) separating, heating and recycling to the grinder spent bleaching liquor containing residual bleaching chemicals.

4,207,141
PROCESS FOR CONTROLLING PULP WASHING SYSTEMS

George W. Seymour, 2841 Parkwood Dr., Brunswick, Ga. 31520

Filed May 9, 1978, Ser. No. 904,360
Int. Cl.[2] D21C 9/02, 9/06
U.S. Cl. 162—49 14 Claims



1. A process for controlling the flow rate of a liquid shower for a desired dilution factor in a countercurrent pulp washing operation in which the shower is applied to a slurry mat consisting of a mixture of a liquid and a solid material which rotates on the surface of a rotary drum vacuum filter wherein the liquid content per unit area of the slurry mat is determined by directly measuring the dielectric properties of the slurry

mat after it has passed over a vacuum break and before it is discharged from the vacuum filter and the flow rate of the liquid shower is controlled in relation to said measured liquid content per unit area of the slurry mat with the surface area and the rotational speed of the rotary drum vacuum filter and said dilution factor.

4,207,142

PAPER SIZING AGENTS

David Shepherd, Whitehall, Bristol, England, assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

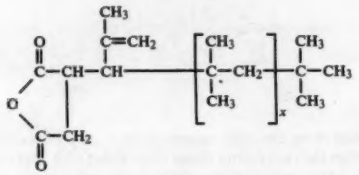
Filed Jun. 21, 1978, Ser. No. 917,777

Claims priority, application United Kingdom, Jun. 28, 1977, 27091/70

Int. Cl.[2] D21H *3/08, 3/10*

U.S. Cl. 162—158 **22 Claims**

1. A method of sizing paper, which comprises dispersing within wet paper pulp, or, after conversion of such pulp into paper treating the resultant web with, a sizing agent which comprises an emulsion in an aqueous medium containing at least one compound selected from long-chain succinic anhydride derivatives of the general formula:



wherein x is an integer from 5 to 16 inclusive.

4,207,143

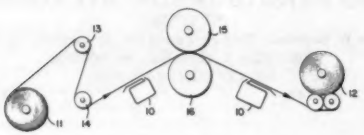
METHOD FOR ADDING MOISTURE TO A TRAVELING WEB

John W. Glomb, Silver Spring, and Gerard P. Closset, Columbia, both of Md., assignors to Westvaco Corporation, New York, N.Y.

Filed Oct. 13, 1976, Ser. No. 731,985

Int. Cl.[2] D21J *11/00*

U.S. Cl. 162—207 **4 Claims**



1. A method for the controlled application of small quantities of moisture in the range of from about 0.20 to 3.0% to a traveling web of paper or the like comprising:

(a) providing a steamfoil nozzle device connected to a source of substantially dry steam vapor at a pressure greater than atmospheric pressure adjacent to the path of a traveling web of paper or the like;

(b) passing said traveling web in close proximity to said steamfoil nozzle device;

(c) adjusting the gap between said traveling web and said steamfoil nozzle device in order to control the amount of moisture picked up by the traveling web;

(d) emitting from said nozzle into the gap between said web and steamfoil device a quantity of said substantially dry steam vapor at a nozzle velocity greater than the web velocity so that the web is drawn toward said steamfoil device to ride on a cushion provided by the steam vapor and the air surrounding said web without touching said steamfoil device;

(e) disrupting the boundary layer air associated with said web to produce an intimate contact between the steam flow and the web; and,

(f) mixing the boundary layer air associated with the traveling web with the steam to produce condensation in and on the web and provide a uniform addition of moisture to said web.

4,207,144

PAPERMAKING MACHINES

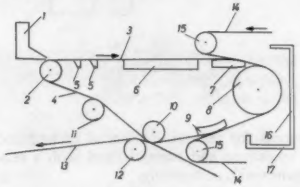
Albrecht Meinecke, and Heinrich Zag, both of Heidenheim, Fed. Rep. of Germany, assignors to J. M. Voith, GmbH, Heidenheim, Fed. Rep. of Germany

Continuation of Ser. No. 840,920, Oct. 11, 1977, abandoned. This application Jan. 10, 1979, Ser. No. 2,319

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1976, 2647295

Int. Cl.[2] D21F *1/36;* D21H *1/06*

U.S. Cl. 162—304 **18 Claims**

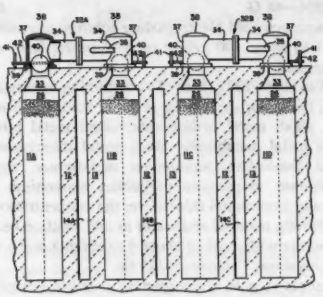


1. A papermaking machine, comprising inner screen means movable in a first closed loop path, other screen means movable in a second closed loop path, a portion of said first closed loop path comprising a generally horizontal path traversed by said inner screen means, means defining a preliminary water extraction zone situated generally along said generally horizontal path and effective for removing a preliminary amount of water from material carried by said inner screen means therepast, said means defining a preliminary water extraction zone comprising suction box means situated generally adjacent said inner screen means and below said generally horizontal path, rotatable dewatering roller means comprising a generally cylindrical imperforate roller shell, said first and second closed loop paths being such as to lead said inner and outer screen means together posterially to said preliminary water extraction zone and over and against a portion of the arcuate periphery of said imperforate roller shell, said inner and outer screen means first operatively engaging said imperforate roller shell at an area thereof at least near the arcuate top thereof, water collecting means disposed externally of said imperforate roller shell for collecting such water as is centrifuged from said screen means passing over and against said portion of said imperforate roller shell, said first and second closed loop paths being such as to cause said inner and outer screen means to leave said imperforate roller shell at a point in the lower half of said roller shell, and guide means disposed generally anteriorly to said imperforate roller shell, said guide means comprising a convex curved sliding surface, said guide means and said sliding surface being so positioned as to result in said inner screen means sliding thereacross as to thereby be led onto said imperforate roller shell, said curved sliding surface having a radius of curvature greater than the radius of curvature of said imperforate roller shell, said first and second closed loop paths also being such as to cause said inner screen means to carry thereagainst said outer screen means as said inner screen means passes over and against said sliding surface.

4,207,145
METHOD TO CONTROL CARBON FORMATION AND TEMPERATURE IN THE FREE SPACE OF COKE OVEN CHAMBERS

Harry D. Hatters, and Joseph M. Stoll, both of Pittsburgh, Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1978, Ser. No. 928,767
Int. Cl.[2] C10B *47/00, 27/02*
U.S. Cl. 201—41 9 Claims



1. A method for suppressing carbonaceous deposits and reducing the temperature in the free spaces above coal charges in coking chambers of a coke oven battery, said method including the steps of:

coupling a collector main to one end of each coking chamber to withdraw coke oven gas therefrom,

providing a passageway for the flow of coke oven gas connecting at least two coking chambers,

passing untreated coke oven gas at the naturally occurring cooler temperature from the free space above the coal charge during the coking cycle in the most recently charged one of the connected coking chambers through said passageway into the free space above the coal charge of another of the coking chambers during the coking cycle to reduce the relatively higher temperature in the free space above the coal charge therein, the coke oven gas passed through said passageway occurring essentially during the actual coking cycles by both of said coke oven chambers, and

preventing the flow of coke oven gas in said passageway essentially during the pushing of coke from either of the two coking chambers by maintaining a positive pressure in said passageway.

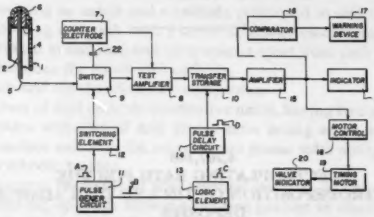
4,207,146
PROCESS FOR TESTING GASES IN BODY FLUIDS FOR PARTIAL PRESSURE AND TO A TESTING DEVICE THEREFOR

Stefan Kunke, Wiesbaden, Fed. Rep. of Germany, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 866,236, Jan. 3, 1978, abandoned. This application Apr. 17, 1979, Ser. No. 30,941
Claims priority, application Fed. Rep. of Germany, Jan. 12, 1977, 2701020
Int. Cl.[2] G01N *27/46;* A62B *7/02*
U.S. Cl. 204—1 T 11 Claims

7. A test device for testing the partial pressure of oxygen in body fluids, comprising a test electrode insertable into the body fluids to be tested, said electrode comprising a central wire, and a tubular envelope disposed around and covering said wire made of a material which is permeable to oxygen to be tested and impermeable to the body fluid, a pulse generator (11) connected to said electrode for applying a biasing voltage pulse to said electrode for producing a test pulse, a logic element (13) connected to said pulse generator (11) for producing a transfer control pulse of a duration shorter than the duration of said biasing voltage pulse, a pulse delay circuit (14) connected to said logic element for delaying the start of said transfer control pulse at least until said test pulse has reached a maximum value amplitude, a test amplifier (8) connected to said electrode for amplifying said test pulse, a transfer storage unit (10) connected to said test amplifier and said pulse delay circuit for impressing said transfer control pulse onto said amplified test pulse to produce a transfer pulse having a duration substantially equal to the duration of said transfer control pulse and an amplitude substantially proportional to the amplitude of said test pulse during the time of said transfer control pulse and at least one output transducer connected to said transfer storage unit for receiving said transfer pulse whereby said transfer oukse is proportional to the partial pressure of oxygen in a body fluid.

9. A process for the polarographic testing of the partial pressure of a gas in a body fluid using a pair of electrodes at



least one of which is disposed within the body fluid, comprising feeding a biasing voltage pulse to the electrode disposed within the body fluid to form a test pulse resulting in a current flow between the electrodes, forming a transfer control pulse of a duration smaller than the duration of said test pulse and beginning at a time after the beginning of said test pulse and at least when said test pulse has risen to its maximum amplitude, impressing said control transfer pulse on said test pulse to form a transfer pulse having a duration substantially equal to the duration of said transfer control pulse and an amplitude substantially proportional to the amplitude of said test pulse during the time of said transfer pulse, amplifying said transfer pulse, and applying said amplified transfer pulse to an output transducer, whereby said amplified transfer pulse is proportional to the partial pressure of a gas in a body fluid and can be utilized to indicate the partial pressure, sound a warning, or actuate means for altering the partial pressure of a gas in the body fluid.

4,207,147
ELECTRODE FOR THE ELECTROLYTIC DEPOSITION OF METALS

Lucien Babin, Valleyfield, Canada, assignor to Noranda Mines Limited, Toronto, Canada

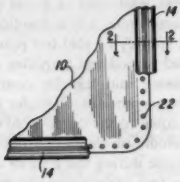
Filed Oct. 11, 1978, Ser. No. 950,447
Claims priority, application Canada, Oct. 11, 1977, 288444
Int. Cl.[2] C25C *7/02;* C25D *1/10*
U.S. Cl. 204—12 5 Claims

1. An electrode for the electrolytic deposition of metals comprising:

(a) a metal plate adapted to be suspended vertically in an electrolytic solution and having round corners joining the side edges to the bottom edge thereof and a plurality of holes formed along the side and bottom edges and along the round corners; and

(b) a continuous edge strip of electrically insulating material having a longitudinal groove therein of a width about

equal to the thickness of the metal plate so as to closely envelop the side and bottom edges of the plate, and



wherein the material of the continuous edge strip is heat-pressed into said holes for anchoring the strip to the plate.

4,207,148

ELECTROPLATING BATH FOR THE ELECTRODEPOSITION OF TIN AND TIN/CADMIUM DEPOSITS

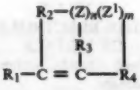
Grace F. Hsu, Somers, Conn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Continuation of Ser. No. 890,925, Mar. 28, 1978, abandoned, which is a continuation of Ser. No. 748,938, Dec. 9, 1976, abandoned, which is a continuation of Ser. No. 636,068, Nov. 28, 1975, abandoned. This application Feb. 16, 1979, Ser. No. 12,806

Int. Cl.[2] **C25D** *3/32, 3/56, 3/60*

U.S. Cl. 204—43 S **6 Claims**

1. An aqueous acid plating bath for the electrodeposition of bright tin and tin/cadmium alloys comprising about 7.5 to 75 grams per liter of a metal ion selected from the group consisting of stannous ion, cadmium ion and mixtures thereof; about 70 to 400 grams per liter of a free acid selected from the group consisting of fluoboric acid, sulfuric acid and mixtures thereof; about 3 to 30 grams per liter of a non-ionic polyoxyalkylated surfactant; and a brightener combination consisting of about 0.01 to 0.5 grams per liter of a ring-halogenated aryl aldehyde, about 2 to 30 milliliters per liter of a 37 percent by weight aqueous formaldehyde solution; and about 0.1 to 2.0 grams per liter of at least one compound of the formula:



where n is zero or 1, m is zero or 1, and when n is 1, m is zero, and when m is 1, n is zero, R_1 is hydrogen or a lower alkyl group, and when n and m are zero, R_2 and R_3 are hydrogen or lower alkyl groups, and R_4 is a formyl, alkyl carbonyl, carboxamido or carboxy group or mixtures thereof, and when R_4 is a formyl or alkyl carbonyl group or mixture thereof, R_1 or R_2 is a lower alkyl group; when n is 1, the combination of R_2 and Z represent ethylene, R_3 is an oxygen or sulfur radical, and R_4 is a formyl, alkyl carbonyl, carboxamido or carboxy group or mixture thereof; when m is 1, the combination of R_2 and Z^1 represent alkylene, R_3 is hydrogen or a lower alkyl group and R_4 is a carbonyl group.

4,207,149

GOLD ELECTROPLATING SOLUTIONS AND PROCESSES

David R. Mason, Ross-on-Wye; Alan Blair, Upper Lydbrook, and John S. Stevenson, Ruardean, all of England, assignors to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Continuation of Ser. No. 802,166, May 31, 1977, abandoned, which is a continuation of Ser. No. 636,441, Dec. 1, 1975, abandoned. This application Aug. 7, 1978, Ser. No. 931,643

Claims priority, application United Kingdom, Dec. 4, 1974, 52520/74

Int. Cl.[2] **C25D** *3/48*

U.S. Cl. 204—46 G **15 Claims**

1. An aqueous gold electroplating solution consisting of,

about 1 to about 100 g/liter of gold in the form of a gold compound;

about 1 to about 200 g/liter of a conducting material selected from the group consisting of boric acid, alkali metal borate, alkali metal orthoborate, alkali metal tetraborate, alkali metal metaborate, alkali metal thiocyanate, alkali metal thiosulfate, ammonium metaborate, ammonium tetraborate, ammonium perborate, ammonium thiocyanate and ammonium thiosulfate; the concentration of said conducting material and water in said solution being commensurate with a pH of about 4 to about 8 and a viscosity of from about 2° to about 12° Be.

9. An aqueous gold electroplating solution comprising, in combination, about 1 to about 100 g/liter of gold in the form of a gold compound and

about 1 to 200 g/liter of a conducting material selected from the group consisting of boric acid, an alkali metal nitrate and an alkali metal orthophosphate, provided that there is present at least an alkali metal nitrate and an alkali metal orthophosphate, the concentration of conducting material and water in said solution being commensurate with a pH of about 4 to about 8 and a viscosity of from about 2° to about 12° Be.

4,207,150

ELECTROPLATING BATH AND PROCESS

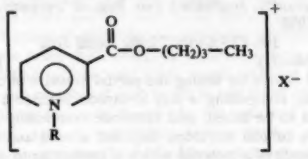
Hans G. Creutz, deceased, late of Yale, Mich. (by Katharina A. Creutz, administratrix); Sylvia Martin, Detroit, Mich.; Debra J. Saez, Madison, Wis., and Roy W. Herr, Troy, Mich., assignors to Oxy Metal Industries Corporation, Warren, Mich.

Continuation-in-part of Ser. No. 872,190, Jan. 25, 1978, abandoned. This application May 15, 1979, Ser. No. 39,403

Int. Cl.[2] **C25D** *3/22*

U.S. Cl. 204—55 R **8 Claims**

1. An aqueous non-cyanide zinc electroplating bath having a pH of from about 2.0 to about 7.5 containing an amount, effective to provide leveling and brightening, of a primary leveling and brightening agent comprising a bath soluble butyl nicotinate quaternary salt of the formula:



Wherein:

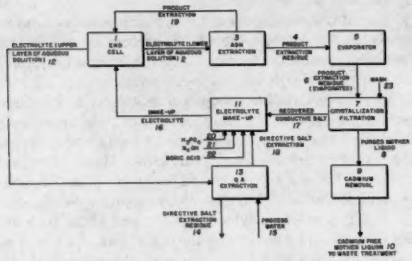
R is CH_3, C_2H_5 or $C_6H_5CH_2$, and

X is R—O—SO_3 or R—SO_3

4,207,151
ELECTROHYDRODIMERIZATION PROCESS IMPROVEMENT AND IMPROVED ELECTROLYTE RECOVERY PROCESS

Fritz R. Franke; Leonard L. Hovey; George H. Mock, and Andrew M. Patterson, Jr., all of Pensacola, Fla., assignors to Monsanto Company, St. Louis, Mo.

Filed Jun. 4, 1976, Ser. No. 693,062
Int. Cl.² C26B 3/00
U.S. Cl. 204—73 R **15 Claims**



1. In a continuous process for hydrodimerization of an olefinic compound having the formula $R_2C{=}CR{-}X$ wherein $-X$ is $-CN$, $-CONR_2$ or $-COOR'$, R is hydrogen or R′ and R′ is C_1–C_4 alkyl, to form a dimerized product, which comprises electrolyzing in a reaction cell an aqueous electrolyte solution having dissolved therein at least 0.1% by weight of the olefinic compound, at least 10^{-5} gram mol per liter of quaternary ammonium cations of a directive salt and at least 0.1% by weight of conductive salt, the aqueous solution having an organic phase and an aqueous phase, being in contact with the cathodic surface having a cathode potential sufficient for hydrodimerization of the olefinic compound, purging the aqueous solution, recovering dimerized product by extracting with the olefinic compound the dimerized product from the aqueous phase of the purged aqueous solution thereby producing a product extraction comprising the dimerized product and the olefinic compound and leaving a product extraction residue comprising conductive salt; extracting with water quaternary ammonium salt from the organic phase of the aqueous solution thereby producing a directive salt extraction comprising quaternary ammonium salt and water and a directive salt extraction residue comprising the dimerized product, and thereafter crystallizing the product extraction residue to recover the conductive salt, and reconstituting the aqueous solution employing the recovered conductive salt and the recovered quaternary ammonium salt, the improvement comprising evaporating the product extraction residue, in an amount not to exceed process water gain, to a conductive salt concentration of 10–30% before crystallizing, thereby minimizing conductive salt loss in the crystallizing step, making up process water balance by substantially reducing water gained in the process including water gained in extracting the quaternary ammonium salt.

4,207,152
PROCESS FOR THE PURIFICATION OF ALKALI METAL CHLORIDE BRINES

Igor V. Kadija, and Jimmy M. French, both of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 25, 1979, Ser. No. 33,364
Int. Cl.² C25B 1/16, 1/26
U.S. Cl. 204—98 **23 Claims**

1. A process for purifying an alkali metal chloride brine used in electrolytic processes by removing cationic contaminants which comprises:

(a) contacting said brine with solid particles of a magnesium-containing silicate having a mole ratio of silicon to magnesium of at least about 1:1, whereby said cationic contaminants in said brine adhere to said magnesium-containing silicate particles, thereby reducing the concentration of said cationic contaminants in said brine, and

(b) separating the resulting solid particles of magnesium-containing silicate having said cationic contaminants adhering thereto from the resulting purified brine.

4,207,153
ELECTROREFINING CELL WITH BIPOLAR ELECTRODE AND ELECTROREFINING METHOD

H. William Flood, Acton, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed Feb. 16, 1979, Ser. No. 12,879
Int. Cl.² C25C 1/12, 7/00
U.S. Cl. 204—106 **11 Claims**

1. A method for the electrorefining of cement copper comprising:

providing a tank for containing electrolyte,

providing a conveyable rack which can be loaded with electrodes at a location remote from the tank, said rack being formed of a non-conductive material,

providing an anode and a cathode positioned in said rack,

providing said rack with a series of bipolar electrodes positioned in said rack and close spaced apart from each other between the anode and cathode,

each said bipolar electrode comprising:

a sheet of acid resistant conductive metal, having two planar sides with one of said planar sides acting as an anodic surface and with the other of said planar sides acting as a cathodic surface,

a support enclosure of acid resistant material, having walls having openings allowing the free passage of electrolyte therethrough, said support enclosure being mounted on that planar side of said sheet that faces the cathode, and

a filter means lining the inside of said enclosure for allowing free passage of electrolyte therethrough and for capturing fine metals and insoluble slimes,

loading said rack into said tank,

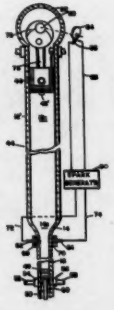
connecting said anode and cathode to suitable sources of DC power, and

feeding a slurry of cement copper and electrolyte to said support enclosures.

4,207,154
WAVE GENERATING APPARATUS AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 668,561, Jun. 27, 1957, abandoned. This application Nov. 30, 1970, Ser. No. 93,779
Int. Cl.² B01J 1/12
U.S. Cl. 204—157.1 S **22 Claims**



1. Shock wave generating apparatus for creating a predetermined change in material comprising:

a reactor having a reaction chamber, said reaction chamber defining a wave-generating zone and a reaction zone and

means joining the two zones so as to define a continuous fluid column, means for intermittently generating shock waves within said wave-generating zone and means for directing each of said shock waves from said wave-generating zone to said reaction zone at a frequency such that a reinforcing, moving shock wave effect is attained in the reaction zone and shock waves are repeatedly propagated through said reaction zone, means for admitting a working fluid capable of being chemically changed by shock waves to said reaction chamber, means for removing reaction products from said chamber, means for controlling the operation of said admitting means to admit fluid to said reaction chamber in synchronization with the operation of the means for generating shock waves in said wave-generating zone whereby said reinforcing shock wave effect is maintained in said reaction zone and the plurality of shock waves passing through said reaction zone are caused to react on matter admitted thereto, and means for periodically removing fluid from said reaction zone after it has been predeterminately changed in characteristic by the action of a plurality of shock waves directed thereagainst in moving through said reaction zone.

4,207,155

DILUENTS FOR ULTRAVIOLET COATING COMPOSITIONS

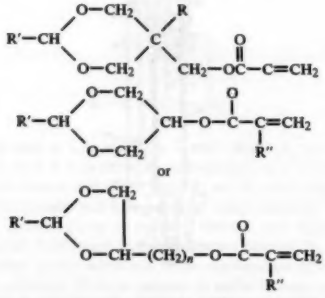
Preston K. Martin, East Brunswick; William A. Hoffman, III, North Bergen, and John C. Trebellas, Berkeley Heights, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 650,332, Jan. 19, 1976, abandoned. This application Jun. 20, 1978, Ser. No. 917,246

Int. Cl.[2] **C08F** *2/50, 24/00*

U.S. Cl. 204—159.23 **7 Claims**

1. An ultraviolet curable coating composition containing, based on total composition weight, between about 40 and 97.5 weight percent of an alpha beta ethylenically unsaturated vinyl polymerizable compound containing at least about two vinyl polymerizable groups per molecule; between about 0 and 57.5 weight percent of an alpha beta ethylenically unsaturated vinyl polymerizable compound containing a single vinyl polymerizable group; an ultraviolet photoinitiator; and between about 2.5 and 60 percent of a comonomer diluent having low viscosity and extremely low volatility and excellent cure response, wherein the said comonomer diluent corresponds to the formula:



or

where R is $-CH_3$ or $-CH_2CH_3$; R′ is hydrogen, C_1–C_3 alkyl or C_1–C_3 halogenated alkyl; R″ is hydrogen or methyl; and n is 1–4.

4,207,156

ULTRAVIOLET PHOTOINITIATOR SYSTEMS UTILIZING AROMATIC SULFIDES AND TRIPLET STATE ENERGIZERS

George L. Collins, Murray Hill; John R. Costanza, N. Plainfield, and Anthony B. Conciatori, Chatham, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 762,089, Jan. 24, 1977, abandoned. This application Feb. 23, 1978, Ser. No. 880,673

Int. Cl.[2] **C08F** *2/46, 4/00*

U.S. Cl. 204—159.24 **4 Claims**

1. An ultraviolet curable coating composition consisting essentially of about 20 to about 100 percent by weight, based on the total curable composition, of an alpha beta ethylenically unsaturated vinyl polymerizable compound containing at least two vinyl polymerizable groups per molecule, up to about 60 percent by weight, on the same basis, of an alpha beta ethylenically unsaturated compound containing a single polymerizable alpha beta ethylenically unsaturated group, about 0.05 to about 15 percent by weight, on the same basis, of an ultraviolet photoinitiator, about 0.1 to about 5.0 percent by weight, on the same basis, of poly(phenylene sulfide), and about 0.05 up to about 0.1 percent by weight, on the same basis, of a triplet state sensitizer having a triplet state energy in the range of about 40 to about 60 k cal/mole selected from Eosin-Y, pyrene, fluorescein and trans-stilbene.

4,207,157

METHOD FOR CONTROLLING HALOGEN ION CONCENTRATION IN A PHOTOGRAPHIC PROCESSING SOLUTION

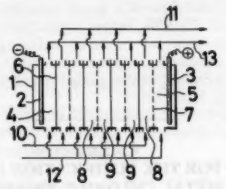
Hiroyuki Hirai; Sachio Matsushita; Isao Tsuyuki, and Kazumi Watase, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara, Japan

Filed Aug. 21, 1978, Ser. No. 935,391

Claims priority, application Japan, Aug. 30, 1977, 52/104011

Int. Cl.[2] **C25B** *1/24, 11/04;* **B01D** *13/02*

U.S. Cl. 204—180 P **6 Claims**



1. A method of controlling the halogen ion concentration of a photographic processing solution, comprising the steps of:

(a) determining the concentration of halogen ions in a photographic processing solution by adding silver ions in a titration reaction with said halogen ions, wherein an end-point of said reaction is detected by sensing a change in electrical potential of said reaction system by means of a halogen ion sensitive electrode system, and

(b) controlling the removal of halogen ions as a function of the concentration determination.

4,207,158

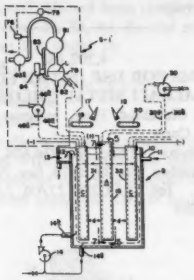
ELECTRICALLY AUGMENTED VACUUM FILTRATION

Mark P. Freeman, Darien, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Division of Ser. No. 898,234, Apr. 20, 1978, which is a continuation-in-part of Ser. No. 697,142, Jun. 17, 1976, Pat. No. 4,107,026. This application May 18, 1979, Ser. No. 40,351

Int. Cl.[2] B01D *13/02*

U.S. Cl. 204—180 R 7 Claims



1. The method of electrically augmented vacuum filtration of a suspension of solids in a carrier liquid, which comprises,

providing and maintaining a body of the suspension of a predetermined at least minimum depth,

establishing in said body an electric field between a pair of opposed, hollow, electrode structures, the energy of said field being such as to cause solids migrating in one direction relative to the carrier liquid to form a cake layer on the ion-permeable surface of a first of said electrode structures, the other electrode structure having a liquid permeable surface for carrier liquid to pass therethrough,

simultaneously filtering carrier liquid under vacuum through said liquid permeable surface, thus delivering the resulting filtrate liquid separated from the suspension,

passing an electrolyte continuously through said first electrode structure to immerse the electrode element therein in a compatible electrolyte of an essentially constant composition,

applying a vacuum to said electrolyte to remove gases evolved at said electrode element and

detaching said cake material from said first electrode structure, and recovering the detached cake material.

4,207,159

APPARATUS FOR MEASUREMENT OF OXYGEN CONCENTRATION

Shinji Kimura, Yokohama; Hiroshi Takao, Kamakura; Shigeo Ishitani, Yokosuka; Kenji Ikezawa, and Koki Sone, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 16, 1979, Ser. No. 12,763

Claims priority, application Japan, Jun. 16, 1978, 53-72044

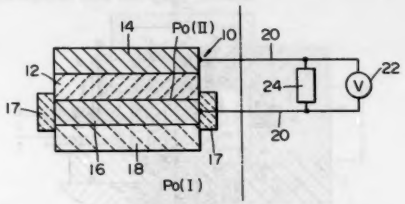
Int. Cl.[2] G01N *27/58*

U.S. Cl. 204—195 S 11 Claims

1. An apparatus for measurement of oxygen concentration in a fluid, comprising:

a probe comprising a layer of an oxygen ion conductive solid electrolyte, a porous and electronically conductive reference electrode layer formed on and in intimate contact with one side of the solid electrolyte layer, a porous and electronically conductive measurement electrode layer formed on and in intimate contact with the other side of said solid electrolyte layer and a separation layer of an electrochemically inactive material formed on and in intimate contact with the outer side of said reference electrode layer, at least one of said solid electrolyte layer and said separation layer having a porous structure permeable to fluids and being formed such that said reference electrode layer communicates with an exterior atmosphere only through said porous structure, one of said solid electrolyte layer and said separation layer being so shaped and sized as to serve as a structurally basic member of said probe;

a meter connected to said reference electrode layer and said



measurement electrode layer for measuring an electromotive force generated by said probe; and

a DC power source connected to said reference electrode layer and said measurement electrode layer to continuously apply a DC voltage across said solid electrolyte layer thereby to maintain a reference oxygen partial pressure at the interface between said solid electrolyte layer and said reference electrode layer.

4,207,160

MEASURING SENSOR HEAD FOR DETERMINING THE CONTENTS OF GASES IN LIQUIDS

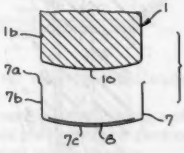
Horst Frankenberger, Bad Schwartau; Dieter Heller, Lübeck, and Georg Ullrich, Freiburg im Breisgau, all of Fed. Rep. of Germany, assignors to Hellige GmbH, Freiburg im Breisgau, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 805,704

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1976, 2628288

Int. Cl.[2] G01N *27/46*

U.S. Cl. 204—195 P 8 Claims



1. An improved sensor head of the type having

a hollow sensor housing,

electrodes within said housing, and

an electrolyte in contact with said electrodes, wherein the improvement comprises:

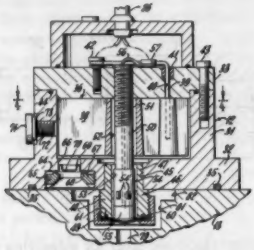
a gas-permeable membrane mounted on said housing preformed into a cap shape having a rim portion integral therewith smaller in diameter than the outer peripheral surface of the housing so that the membrane fits snugly thereon and a bottom portion for contact with the electrolyte.

4,207,161

DISSOLVED OXYGEN ANALYZER

Timothy C. Pegnim, Wilton, Conn., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,347
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 P 8 Claims



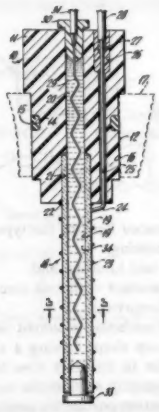
1. An oxygen sensor for measuring dissolved oxygen in water, comprising a hollow housing of non-hydroscopic calendared polyvinylchloride or molded epoxy resin having a liquid filler plug in one housing wall, said housing including an opening closed by an oxygen permeable membrane, a substantially pure lead anode electrode within said housing and a conductor of substantially pure lead connected to said anode and extending through the housing wall, a substantially pure silver cathode within said housing and positioned in close proximity to said membrane, a conductor of substantially pure silver connected to said cathode and extending through said housing wall, and an electrolyte filling said housing, whereby dissolved oxygen in water circulated about the outer side of said membrane will penetrate said membrane and produce a current through indicating means connected to said conductors which is proportional to the quantity of dissolved oxygen in said water.

4,207,162

CHEMICAL DETECTOR UTILIZING AN ELECTROLYTIC GEL

Thomas H. Lotze, Peekskill, N.Y., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.

Filed Mar. 7, 1979, Ser. No. 18,154
Int. Cl.[2] G01N *27/46*
U.S. Cl. 204—195 R 2 Claims



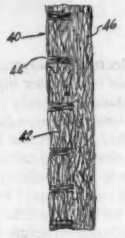
1. An electrolytic cell for the detection of hydrazine in water comprising an elongated hollow cylindrical member formed of a porous insulating material, insulating means for supporting said member in said water, a platinum electrode wound about the outer side of said member and having a lead wire extending therefrom, a silver electrode within said member and having a lead wire extending therefrom, an electrolytic gel containing silver oxide at least partially filling said member and enveloping said silver electrode and indicating means connected between said lead wires, said indicating means responding to the current flowing between said electrodes when hydrazine is present in the water.

4,207,163

DIAPHRAGMS FOR USE IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 836,636, Sep. 26, 1977. This application Sep. 29, 1978, Ser. No. 947,235
Int. Cl.[2] C25B *13/06, 1/46*
U.S. Cl. 204—253 23 Claims



1. In an electrolytic diaphragm cell for the electrolysis of aqueous solutions of ionizable compounds, said cell having an anode assembly containing a plurality of anodes, a cathode assembly having a plurality of cathodes, a diaphragm separating said anode assembly from said cathode assembly, and a cell body housing said anode assembly and said cathode assembly, the improvement which comprises a porous diaphragm comprising a thermoplastic support fabric impregnated with particles of a siliceous composition having the formula:

$$(X)_m(Si)_p(O)_q(H)_r \cdot nH_2O$$

wherein

X is at least one metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ti, Zr, Al, Zn and mixtures thereof;
p is a number from 1 to about 16;
m is zero to about p;
q is a number from 2 to about 5p+r;
r is zero to about 4p; and
n is zero to about 30;

said siliceous compositions being capable of undergoing hydration when in contact with at least one of said ionizable compounds in said electrolytic cell; said support fabric having means to provide linear permeability to said aqueous solutions.

4,207,164

DIAPHRAGMS FOR USE IN THE ELECTROLYSIS OF ALKALI METAL CHLORIDES

Igor V. Kadija, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 838,600, Oct. 3, 1977, Pat. No. 4,165,271. This application Sep. 29, 1978, Ser. No. 947,236
Int. Cl.[2] C25B *13/06, 1/46*
U.S. Cl. 204—253 23 Claims

1. In an electrolytic diaphragm cell for the electrolysis of aqueous solutions of ionizable compounds, said cell having an

anode assembly containing a plurality of anodes, a cathode assembly having a plurality of cathodes, a diaphragm separating said anode assembly from said cathode assembly, and a cell body housing said anode assembly and said cathode assembly, the improvement which comprises a porous diaphragm comprised of a thermoplastic support fabric impregnated with particles of a siliceous composition having the formula:

$$(X)_m(Si)_p(O)_q(H)_r \cdot nH_2O$$

wherein

X is at least one metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ti, Zr, Al, Zn and mixtures thereof;
p is a number from 1 to about 16;
m is zero to about p;
q is a number from 2 to about 5p+r;
r is zero to about 4p; and
n is zero to about 30;

said siliceous compositions being capable of undergoing hydration when in contact with at least one of said ionizable compounds in said electrolytic cell; said support fabric having an electroconductive zone along one side of said fabric support;

and said support fabric having means to provide linear permeability to said aqueous solutions.

2. A porous diaphragm for an electrolytic cell for the electrolysis of aqueous solutions of ionizable compounds which comprises a thermoplastic support fabric impregnated with particles of a siliceous composition having the formula:

$$(X)_m(Si)_p(O)_q(H)_r \cdot nH_2O$$

wherein

X is at least one metal selected from the group consisting of Be, Mg, Ca, Sr, Ba, Ti, Zr, Al, Zn, and mixtures thereof;
p is a number from 1 to about 16;
m is zero to about p;
q is a number from 2 to about 5p+r;
r is zero to about 4p; and
n is zero to about 30;

said siliceous compositions being capable of undergoing hydration when in contact with at least one of the ionizable compounds in the electrolytic cell; said support fabric having an electroconductive zone along one side of said support fabric and said support fabric having means to provide linear permeability to said aqueous solutions.

4,207,165

FILTER PRESS CELL

Luciano Mose, Dortmund; Helmut Schurig, Holzwickede, and Bernd Strasser, Hamm, all of Fed. Rep. of Germany, assignors to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Filed May 17, 1979, Ser. No. 39,992

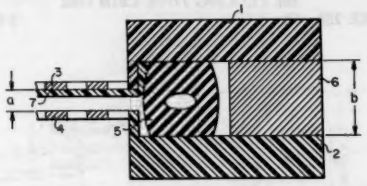
Claims priority, application Fed. Rep. of Germany, May 19, 1978, 2821981

Int. Cl.[2] **C25B** *9/00, 13/02, 13/04*

U.S. Cl. 204—258 **7 Claims**

1. An electrolytic cell comprising:

(a) a planar anode mounted in a peripheral frame member, the sides of said frame member having an inner and an outer portion,
(b) a planar cathode mounted in a peripheral frame member, the sides of said frame member having an inner and an outer portion,
(c) a permeable barrier positioned between said anode and said cathode,
(d) a spacer member positioned between said frame members contiguous their said outer portions,



(e) at least one hollow gasket member positioned between said frame members contiguous their said inner portions, said hollow gasket members having a total width in the uncompressed state greater than the width of said spacer member,
(f) means for compressing and holding said frame members in a coupled state forming a cell unit,
(g) means for adding electrolyte and removing electrolysis products from said cell unit, and
(h) means for connecting said anode and said cathode members to a source of electrolyzing current.

4,207,166

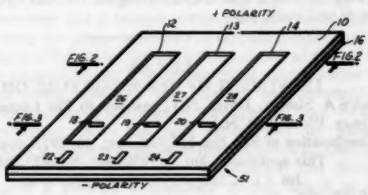
METHOD AND APPARATUS FOR ELECTROPHORESIS

Harald Dahms, 22 Lakeview Rd., Ossining, N.Y. 10562

Continuation of Ser. No. 667,403, Mar. 16, 1976, abandoned, which is a continuation of Ser. No. 392,760, Aug. 29, 1973, abandoned, which is a continuation of Ser. No. 122,310, Mar. 9, 1971, abandoned. This application Jun. 9, 1977, Ser. No. 804,924

Int. Cl.[2] **G01N** *27/26, 27/28*

U.S. Cl. 204—299 R **20 Claims**



1. An apparatus for electrophoretic analysis of biological samples comprising:

input means for receiving and holding a plate to be used in said analysis, said plate having an electrophoretic medium and said biological sample thereon,
support means for supporting an electrophoretic bath which said plate contacts during said analysis,
electric means for applying an electric field across said plate while said plate is in contact with said bath, said electric means including means for electrically contacting said bath, and
mechanical means connected to said input means for bringing said plate and said bath into electrolytic contact with one another for a time sufficient to allow electrophoresis to occur and for providing relative motion between said plate and said bath, said electric field being applied in a direction which is transverse to said relative motion to

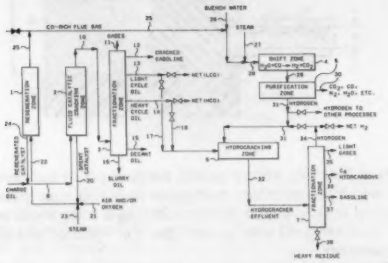
produce electrophoretic separations which extend in a direction transverse to said relative motion.

4,207,167

COMBINATION HYDROCARBON CRACKING, HYDROGEN PRODUCTION AND HYDROCRACKING

Ralph W. Bradshaw, Houston, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1978, Ser. No. 888,719
Int. Cl.[2] C10G *37/06;* C01B *1/02*
U.S. Cl. 208—68 **2 Claims**



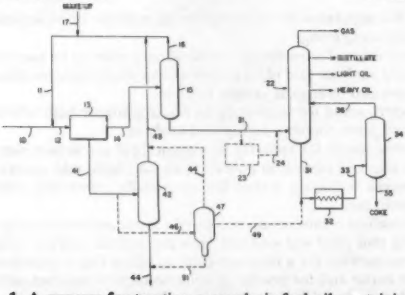
1. A process for producing a hydrocracked oil which comprises in a cracking zone cracking a hydrocarbon oil in the presence of a catalyst, fractionating cracked vapors thus produced to obtain a cycle oil and hydrocracking said cycle oil in the presence of hydrogen obtained as follows: regenerating in a regenerator in said cracking zone spent catalyst as obtained from said cracking and having coke laydown thereon, under conditions to combust said coke to produce a flue gas containing carbon monoxide, recovering said flue gas from said regenerator, adding at least one of water and steam to quench said recovered flue gas and as needed to adjust the temperature of said flue gas and to provide steam reactant; in an ensuing water shift reaction, subjecting said recovered flue gas containing carbon monoxide and now containing steam to a water shift reaction to produce carbon dioxide and hydrogen recovering hydrogen from said water shift reaction product and using said hydrogen, thus obtained and recovered, for said hydrocracking of said cycle oil.

4,207,168

TREATMENT OF PYROLYSIS FUEL OIL

André A. Simone, Dover, N.J., assignor to The Lummus Company, Bloomfield, N.J.

Continuation of Ser. No. 825,730, Aug. 18, 1977, abandoned. This application Jul. 7, 1978, Ser. No. 922,595
Int. Cl.[2] C10G *21/14, 9/14;* C09C *1/48*
U.S. Cl. 208—86 **17 Claims**



1. A process for treating a pyrolysis fuel oil containing asphaltenes, said pyrolysis fuel oil being a heavy residual black oil boiling above pyrolysis gasoline produced as byproduct in the steam cracking of virgin petroleum fractions to ethylene, comprising: contacting said pyrolysis fuel oil with a petroleum fraction liquid promoter which enhances and promotes the separation of asphaltenes from said pyrolysis fuel oil, said liquid promoter having a 5 volume percent distillation temperature of at least about 310° F. and a 95 volume percent distillation temperature of at least about 350° F. and no greater than about 750° F., said liquid having a characterization factor of at least 9.75; and separating by gravity settling a liquid overflow of a pyrolysis fuel oil fraction having a reduced quantity of asphaltene, which is free of quinoline insolubles, from a liquid underflow of a pyrolysis fuel oil fraction having an increased quantity of asphaltene, said underflow and overflow including liquid promoter.

4,207,169

PROCESS FOR THE STEAM DEALKYLATION OF AROMATIC HYDROCARBONS

Philippe Courty, Houilles; Germain Martino, Poissy, and Jean-Francois Le Page, Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 8, 1979, Ser. No. 1,653
Claims priority, application France, Jan. 6, 1978, 78 00335
Int. Cl.[2] C07C *3/58;* B01J *23/64;* C10G *11/02, 35/08*
U.S. Cl. 208—124 **14 Claims**

1. A process for steam dealkylation of a charge containing at least one alkyl aromatic hydrocarbon, in the presence of a catalyst containing an alumina carrier and, expressed by weight with respect to the catalyst, from 0.1 to 1% of rhodium and 0.05 to 1% of titanium oxide TiO_2.

4,207,170

HYDROCARBON CONVERSION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 7, 1978, Ser. No. 931,806
Int. Cl.[2] C10G *35/08*
U.S. Cl. 208—139 **15 Claims**

1. A process for converting a hydrocarbon which comprises contacting the hydrocarbon at hydrocarbon conversion conditions with an acidic catalytic composite consisting essentially of a porous carrier material and, on an elemental basis, about 0.01 to about 2 wt. % platinum component, about 0.05 to about 5 wt. % nickel, about 0.01 to about 5 wt. % cadmium, and about 0.1 to about 3.5 wt. % halogen; wherein the platinum, catalytically available nickel, and cadmium components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum component is present in the elemental metallic state; wherein substantially all of the cadmium component is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available nickel component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon conversion conditions or in a mixture of these states.

4,207,171

DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

John F. Flagg, Rosemont, and George J. Antos, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 758,285, Jan. 10, 1977, Pat. No. 4,110,199. This application Aug. 10, 1978, Ser. No. 932,577
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.[2] C10G *35/08*
U.S. Cl. 208—139 **27 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at dehy-

drocyclization conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, about 0.1 to about 10 wt. % uranium and about 0.1 to about 3.5 wt. % halogen; wherein the platinum group metal, catalytically available cobalt and uranium components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the uranium component is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrocyclization conditions or in a mixture of these states.

4,207,172

HYDROCARBON DEHYDROCYCLIZATION WITH AN ACIDIC MULTIMETALLIC CATALYTIC COMPOSITE

George J. Antos, Bartlett, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 886,329, Mar. 13, 1978, Pat. No. 4,148,715. This application Apr. 23, 1979, Ser. No. 32,588
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.² C01G *35/08*
U.S. Cl. 208—139 **30 Claims**

1. A method for dehydrocyclizing a dehydrocyclizable hydrocarbon comprising contacting the hydrocarbon at hydrocarbon dehydrocyclization conditions with an acidic catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % nickel, about 0.01 to about 5 wt. % lanthanide series metal and about 0.1 to about 3.5 wt % halogen; wherein the platinum group, catalytically available nickel and lanthanide series components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the lanthanide series component is present in a positive oxidation state; and wherein substantially all of the catalytically available nickel component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under hydrocarbon dehyrocyclization conditions or in a mixture of these states.

22. A method as defined in claim **1** wherein the dehydrocyclizable hydrocarbon is contained in a naphtha fraction boiling in the range of about 140° F. to about 400° F.

4,207,173

SWEETENING OF HYDROCARBON DISTILLATES UTILIZING A TETRA-ALKYL GUANIDINE WITH PHTHALOCYANINE CATALYST

Charles A. Stansky, Jr., Elk Grove Village, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 663,879, Mar. 4, 1976, abandoned. This application Sep. 6, 1977, Ser. No. 830,932
Int. Cl.² C10G *27/06*
U.S. Cl. 208—207 **6 Claims**

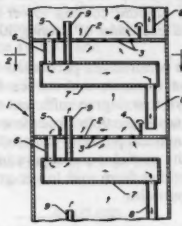
1. In a process for the sweetening of a sour hydrocarbon distillate containing mercaptans by contact of the distillate in the presence of an oxidizing agent and an alkaline medium with a phthalocyanine catalyst supported on a carbon carrier, the improvement which comprises employing as said alkaline medium a tetra-alkyl guanidine.

4,207,174

LIQUID-LIQUID EXTRACTION APPARATUS AND PROCESS

William J. Christman, Barrington, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Aug. 16, 1978, Ser. No. 934,243
Int. Cl.² C10G *21/00, 19/02*
U.S. Cl. 208—226 **5 Claims**



1. A liquid-liquid extraction process which comprises the steps of:

(a) passing a feed stream comprising normally liquid hydrocarbons into the bottom of a vertical trayed extraction column operated at extraction conditions and upward through the extraction column, with the feed stream passing upward through a plurality of passageways distributed across the surface of the trays located within the extraction column;

(b) passing a solvent stream into an upper portion of the extraction column and downward through the extraction column, with the solvent stream flowing across the upper surface of trays located within the extraction column and being directed downward from tray to tray through a plurality of downcomers, including a first downcomer, as a downcomer liquid stream and effecting the contacting of the solvent stream and the feed stream;

(c) passing the downcomer liquid stream flowing across the upper surface of said trays through the first downcomer and then through a quiescent substantially horizontal enclosed liquid phase separation zone which forms a portion of and is of larger cross-sectional area than the first downcomer and is located within the extraction column, effecting the phase separation of entrained liquid hydrocarbons which enter the extraction column as part of the feed stream from the downcomer liquid stream within the liquid phase separation zone, venting the thus-separated liquid hydrocarbons upward through the tray located immediately above the first downcomer by passage through a vertical conduit extending through said tray immediately above the first downcomer, and thereby forming a purified downcomer stream which is discharged downward from the liquid phase separation zone through a second downcomer to a tray located immediately below the second downcomer;

(d) withdrawing a raffinate stream from the top of the extraction column; and,

(e) withdrawing an extract stream from the bottom of the column.

4,207,175

SEPARATION OF MAGNESITE FROM ORES WHICH ALSO CONTAIN CALCITE OR DOLOMITE

Brij M. Moudgil, Ontario, Calif., assignor to Occidental Research Corporation, La Verne, Calif.

Filed Apr. 19, 1978, Ser. No. 897,780
Int. Cl.² B07C *5/02, 5/34*
U.S. Cl. 209—3.3 **10 Claims**

1. A process for the separation of higher-grade magnesite from lower-grade magnesite and at least one mineral selected

from dolomite and calcite present in particulate ore which comprises:

(a) conditioning the particulate ore by contacting it with at least one coupling agent selected from saturated and unsaturated carboxylic acids containing from about 4 to about 22 carbon atoms, combining with said coupling agent at least one fluorescent dye before or after conditioning the particulate ore with the coupling agent, said coupling agent selectively coating at least one mineral selected from calcite and dolomite in the ore and in a relative lesser amount coating lower-grade magnesite to the substantial exclusion of coating higher-grade magnesite; and

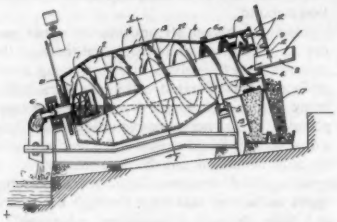
(b) exposing the conditioned particulate ore to electromagnetic radiation to excite and induce fluorescence of the fluorescent dye to a degree sufficient to distinguish higher-grade magnesite particles from lower-grade magnesite particles and mineral particles selected from at least dolomite and calcite particles and separating the higher-grade magnesite particles from said lower-grade magnesite and said mineral particles.

4,207,176

RECLAMATION OF UNSET CONCRETE AGGREGATES

Maxwell G. Hood, Cattai, Australia, assignor to Fowler Rex Pty. Ltd., Brookyate, Australia

Filed Mar. 22, 1978, Ser. No. 889,068
Claims priority, application Australia, Mar. 30, 1977, PC9602
Int. Cl.[2] B03B *11/00, 7/00*
U.S. Cl. 209—44 **7 Claims**



1. An apparatus for the reclamation of aggregate from unset concrete comprising in combination:

(a) an inclined drum mounted for rotation about an inclined axis, said drum having an upper end, a lower end and a sidewall portion extending between said upper and lower ends,

(b) said lower end comprising a barrier wall extending across the lower end of said drum,

(c) means to rotate said drum about said inclined axis,

(d) an upper opening adjacent the upper end of said inclined drum,

(e) a reservoir space within said inclined drum, said reservoir space being formed by at least a portion of the barrier wall extending across the lower end of the drum and at least a portion of the underside of the sidewall of said drum, said reservoir space being adapted for the reception and accumulation of unset concrete,

(f) means to charge unset concrete from said upper opening of the drum into said reservoir space, said means comprising a downwardly inclined elongated tube having an inlet opening adjacent said upper opening of the drum and an outlet opening adjacent said reservoir space,

(g) aggregate conveyor means disposed between the interior of said inclined drum and the exterior of said elongated tube of (f), the lower end of the conveyor means partially extending into said reservoir space,

(h) at least one outlet for aggregate adjacent the upper end of said inclined drum,

(i) said means for rotating said drum also is for rotating said conveyor means so that aggregate is conveyed upwardly from said reservoir space between the interior of said drum and the exterior of said elongated cylindrical tube to said at least one outlet for aggregate adjacent the top of said inclined drum,

(j) a lower liquid slurry opening extending thru said drum, said lower liquid slurry opening being at a lower level than said upper opening (d), said lower opening being approximately level with the top level of said reservoir space and being adapted to discharge a liquid slurry from the inclined drum,

(k) said slurry opening comprises a tube projecting coaxially into said drum and a canister fixed coaxially on said tube; said canister being open at its lower end and sheltering an aperture in said tube,

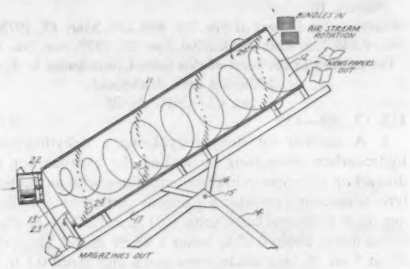
whereby aggregate is shifted from said reservoir space to at least one of said outlets for aggregate.

4,207,177

MATERIAL SORTER

Philip M. Block, 58 Fleetwood Rd., Newington, Conn. 06111

Filed Apr. 3, 1978, Ser. No. 892,973
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—44.2 **2 Claims**



1. An apparatus for sorting materials having various weights and aerodynamic characteristics comprising:

a tubular member having a generally cylindrical shape, said tubular member having a first material receiving end and a second end, said tubular member further having an interior wall and an axis;

a plurality of spacially displaced spikes extending into said tubular member from the interior wall thereof, said spikes being arranged in a helical pattern;

means for rotating said tubular member about its axis;

support means for said tubular member, said support means including means for varying the angle of the axis of said tubular member with respect to the horizontal, the first end of said tubular member normally being elevated with respect to the second end of said tubular member; and

a fan positioned adjacent to the second end of said tubular member, said fan forcing air into said tubular angle at an angle with respect to the axis thereof whereby a stream of air will flow upwardly through the tubular member in a spiral pattern.

4,207,178

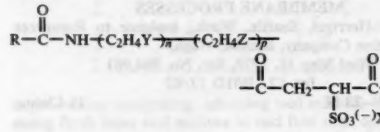
PROCESS FOR BENEFICIATION OF PHOSPHATE AND IRON ORES

Samuel S. Wang, Cheshire, and Eugene L. Smith, Jr., Milford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 863,031, Dec. 21, 1977, abandoned. This application Oct. 30, 1978, Ser. No. 955,868
Int. Cl.[2] B03D *1/02*
U.S. Cl. 209—166 **4 Claims**

1. A process for beneficiating phosphate and iron ores which comprises classifying the mineral to provide particles of flota-

tion size, slurrying the classified mineral in aqueous medium, conditioning the slurry with an effective amount of a collector combination and froth floating the desired mineral values, said collector combination comprising from about 1 to 99 weight percent of a fatty acid derived from a vegetable or animal oil and, correspondingly, from about 99 to 1 weight percent of an alkylamidoalkylaminoalkyl or alkylamidoalkoxyalkyl monoester of a sulfosuccinic acid of the general formula:



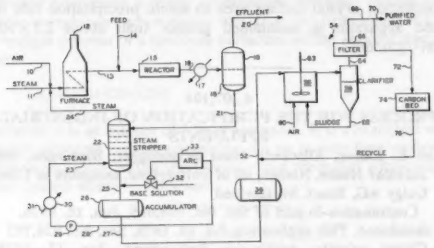
wherein R is a saturated or unsaturated alkyl radical of about 4 to 18 carbon atoms, Y is —NH— or —O—, n is an integer of from 1 to 10 inclusive, Z is —NH— or —O—, p is an integer of from 0 to 9 inclusive such that the sum (n+p) never has a value greater than 10, and X is hydrogen, alkali metal ion or ammonium ion.

4,207,179

BIOTREATMENT USING CARBON TREATED RECYCLE AND/OR CLARIFIER EFFLUENT BACKWASH

William C. McCarthy, and Howard W. Goard, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 709,368, Jul. 28, 1976, abandoned. This application Aug. 22, 1977, Ser. No. 826,596
Int. Cl.[2] C02C *1/06*
U.S. Cl. 210—7 **18 Claims**



1. A method comprising:

passing industrial waste water containing predominately soluble organic industrial waste to a biochemical treatment zone wherein said industrial waste water is treated in a biological treatment zone by an activated sludge process utilizing aerobic bacteria, passing an effluent from said biological treatment zone to a clarifier zone and recycling sludge from said clarifier to said biological treatment zone;

withdrawing a water stream containing some microorganisms from an upper portion of said clarifier zone and passing said water stream to a filtration zone;

withdrawing a purified water stream from said filtration zone;

passing a portion of said purified water stream into contact with activated carbon and then back to said biochemical treatment zone as dilution water, thereby maintaining biological activity in said biological treatment zone; and

discharging the remainder of said purified water stream without activated carbon treatment;

wherein the ratio of said industrial waste water to dilution water is within the range of 1:1 to 1:4.

9. A process comprising:

passing industrial waste water containing predominately soluble organic industrial waste to a biological treatment zone of a biochemical treatment system using activated sludge, passing an effluent from said biological treatment zone to a clarifier zone and recycling sludge from said clarifier to said biological treatment zone;

withdrawing a water stream containing some microorganisms from an upper portion of said clarifier zone and passing said water stream to a filtration zone;

withdrawing a purified water stream from said filtration zone;

periodically backwashing through said filtration zone to return microorganisms from said filtration zone to said activated sludge system; and

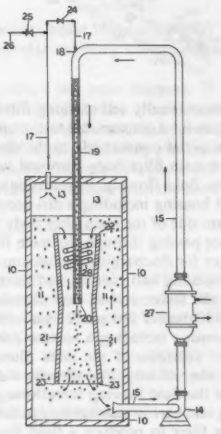
passing a portion of said purified water stream through an activated carbon filter and returning it to said biological treatment zone as dilution water, thereby maintaining biochemical activity in said biochemical treatment system, the ratio of said industrial waste water to dilution water being within the range of 1:1 to 1:4.

4,207,180

GAS-LIQUID REACTION METHOD AND APPARATUS

Shih-chih Chang, 2339 Davison Ave., Richland, Wash. 99352

Filed Jan. 11, 1979, Ser. No. 2,738
Int. Cl.[2] C02C *1/08*
U.S. Cl. 210—7 **20 Claims**



1. A process for promoting gas-liquid reaction in a reactor comprising the steps of; continuously circulating liquid contained in a reactor by removing the liquid by a pump within a recirculating conduit circuit;

pumping said liquid to a substantially vertical return conduit in said circuit, said return conduit extending a predetermined height above the liquid, said height being sufficiently high that is produces a low pressure section in the return conduit;

admitting said gas to said flow conduit at said low pressure section to entrain said gas in said conduit and forming a gas-liquid mixture therein downstream of the gas entrainment;

guiding said gas-liquid mixture flowing downwardly return conduit;

injecting said gas-liquid mixture from the lower end of said return conduit in at least one eductor means below said liquid surface, said eductor means being submerged in said liquid with its inlet and outlet open to said liquid of said reactor, utilizing the injecting flow of said mixture as driving jet to induce a secondary flow in said liquid of said reactor through said eductor means;

whereby the gas bubbles contained in said injecting flow further mix with said secondary flow in said eductor means and subsequently flow in the main body of the reactor liquid, wherein said gas continuously contacting with said liquid of said reactor while rising up to said liquid surface.

4,207,181

SELF-CLEANING FILTERS

Mordeki Drori, 89 Zahal St., Kiron, Israel

Filed Feb. 13, 1978, Ser. No. 877,378

Claims priority, application Israel, Feb. 11, 1977, 51420; Sep. 20, 1977, 52968; Sep. 20, 1977, 52969; Jan. 26, 1978, 53895

Int. Cl.[2] B01D *35/16*

U.S. Cl. 210—111 **12 Claims**

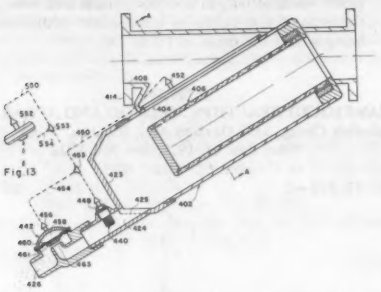


Fig.13

1. An automatically self-cleaning filter comprising: a housing having an inlet connectable to the upstream pipe in a fluid line and an outlet connectable to the downstream pipe in the fluid line; a main filter body disposed within the housing for filtering the fluid flowing therethrough from its inlet to its outlet; said housing including a dirt-accumulating chamber at the upstream side of the main filter body for accumulating dirt particles not passing through the main filter body, and a dirt-purging port for discharging the accumulated dirt particles; a valve for opening and closing said port; a dirt-sensing filter located in the lower end of said chamber to receive on the upstream side thereof dirt particles accumulated in said chamber; said housing including a narrow passageway at the inlet side thereof upstream of the main filter body producing an increase in the velocity, and thereby a decrease in the static pressure, of the fluid flowing therethrough; a fluid connection connecting said narrow passageway to the opposite side of said dirt-sensing filter to produce a fluid flow through said dirt-sensing filter solely by the decreased pressure produced only by said narrow passageway; and sensing means sensing when a predetermined quantity of dirt particles has accumulated in said chamber as sensed by the dirt-sensing filter to automatically open said valve to discharge through said port the dirt particles accumulated in said chamber.

4,207,182

POLYMERIC COMPOSITIONS FOR MEMBRANES

Xavier Marze, Lyons, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Nov. 10, 1976, Ser. No. 740,656

Claims priority, application France, Nov. 14, 1975, 75 35420

Int. Cl.[2] B01D *13/00;* **C08G** *23/00*

U.S. Cl. 210—23 F **23 Claims**

1. A membrane-forming composition useful for making ultrafiltration membranes from a polymer solution thereof having a polymer concentration higher than 20%, said composition comprising a mixture of at least one non-sulphonated polysulphone and at least one sulphonated polysulphone, this mixture containing 10 to 30% by weight of a sulphonated polysulphone which has a theoretical exchange capacity of from 500 to 1200 meq/kg.

13. A membrane formed from a composition as defined in claim 1.

17. In a method of ultrafiltration of a liquid the improvement in which the ultrafiltration membrane is one defined in claim 13.

4,207,183

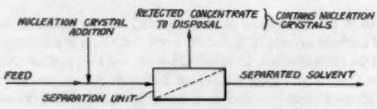
PREVENTION OF SOLUTE DEPOSITION FOULING IN MEMBRANE PROCESSES

Howard R. Herrigel, Seattle, Wash., assignor to Resources Conservation Company, Renton, Wash.

Filed May 11, 1978, Ser. No. 904,981

Int. Cl.[2] B01D *13/02*

U.S. Cl. 210—23 H **18 Claims**



1. A method for preventing fouling in an apparatus used to separate a solvent from a deposit-forming solute which includes a semi-permeable membrane barrier, which comprises introducing an amount of nucleation crystals for said deposit-forming solute into the fluid stream passing to the separation apparatus, said amount being that which is effective to retard the formation of deposits on said semi-permeable membrane barrier by causing said deposit-forming solute to preferentially precipitate on said nucleation crystals rather than on said semi-permeable membrane barrier, wherein said nucleation crystals are comprised of at least one member selected from the group consisting of calcium fluoride, calcium carbonate, calcium sulfate, calcium phosphates and silica and wherein the ratio of nucleation crystal surface area to solute precipitation rate in said apparatus is maintained greater than about 2.5×10^6 $cm^2/gm/min$.

4,207,184

PROCESS FOR THE PURIFICATION OF INDUSTRIAL EFFLUENTS

Leo E. Kaiser, Allschwil; Hans Scheidegger, Binningen, and Jaroslav Haase, Riehen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation-in-part of Ser. No. 694,615, Jun. 10, 1976, abandoned. This application Jul. 14, 1978, Ser. No. 924,782

Claims priority, application Switzerland, Jun. 17, 1975, 7846/75

Int. Cl.[2] C02C *5/02*

U.S. Cl. 210—37 R **21 Claims**

1. A process for the purification and decolorization of an industrial waste water effluent which comprises contacting said effluent, having a dye concentration of 0.05 to 0.5 g/l, with a polymer adsorption solvated gel material having an average molecular weight greater than 500 and a specific surface area greater than 30 m^2/g. and said material being a synthetic man-made thermoplastic in the solvated gel state.

4,207,185

METHOD FOR PURIFYING LIQUIDS

Robert J. Hinds, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

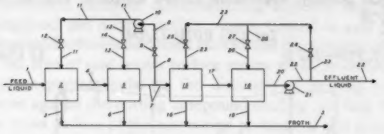
Continuation of Ser. No. 788,378, Apr. 18, 1977, abandoned. This application Oct. 25, 1978, Ser. No. 954,683

Int. Cl.[2] B03D *1/24*

U.S. Cl. 210—44 **6 Claims**

1. In a method for separating a first liquid from a mixture of said first liquid and a particulate solid or a second liquid insoluble in said first liquid, by treating said mixture in a series of flotation steps including at least a first step and a last step, each said step including (1) forming froth including said solid or said

second liquid by mixing gas with said mixture and (2) separating froth from said mixture, and said last step further including contacting a first recycle portion of said mixture remaining after froth is separated therefrom in said last step with said mixture prior to separating froth therefrom in said last step, the



improvement comprising: admixing said mixture, before separating froth from said mixture in said first step, with a second recycle portion of said mixture remaining after froth is separated from said mixture in said first step and before gas is mixed with said mixture in said last step, said second recycle portion being segregated from said first recycle portion.

4,207,186

PROCESS FOR DEWATERING MINERAL CONCENTRATES

Samuel S. Wang, Cheshire; Morris E. Lewellyn, Stamford, both of Conn., and Charles Dugan, Bronx, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 5, 1978, Ser. No. 966,706
Int. Cl.[2] C02B *1/20*; C09K *3/00*
U.S. Cl. 210—54 **7 Claims**

1. A process for dewatering mineral and coal concentrates which comprises mixing with an aqueous slurry of the mineral concentrate an effective amount of a dewatering aid, said dewatering aid comprising, in combination: from about 1 to 99 weight percent of a hydrophobic alcohol, said hydrophobic alcohol containing a linear or branched aliphatic radical of eight to eighteen carbon atoms, inclusive; and from about 99 to 1 weight percent of a nonionic surfactant of the general structure:

$$R—(OCH_2CH_2)_xOH$$

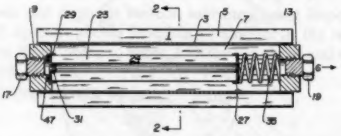
wherein x is an integer of 1 to 15 inclusive, R is a branched or linear aliphatic radical containing six to twenty-four carbon atoms, inclusive, in the alkyl moiety; and thereafter subjecting the treated slurry to filtration.

4,207,187

APPARATUS FOR FILTERING AND COOLING OIL OR OTHER FLUIDS

Robert G. Booth, 6661 Banning Dr., Oakland, Calif. 94611

Filed May 5, 1976, Ser. No. 683,547
Int. Cl.[2] B01D *27/10*
U.S. Cl. 210—130 **5 Claims**



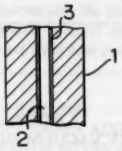
1. A combined filter-cooler device for filtering and cooling fluids comprising only a single peripheral wall defining an axial chamber having a fluid intake end and a fluid discharge end, an intake end cap having an axially disposed input passageway and a discharge end cap having an axially disposed discharge passageway, a plurality of fins extending inwardly from said single peripheral wall defining boundaries of an axial space within said axial chamber in the flow path of fluid through said axial chamber, a plurality of fins extending outwardly from said peripheral wall, a filter disposed within said axial space defined by said inwardly directed fins, said filter having an intake side in flow communication with said axially disposed input passageway and a discharge side in flow communication with said axially disposed discharge passageway.

4,207,188

OPEN TUBULAR CAPILLARY COLUMN FOR HIGH-SPEED MICRO LIQUID CHROMATOGRAPHY

Takao Tsuda, Aichi; Kiyokatsu Hibi, Ohgaki; Toyohide Takeuchi, Tokoname; Tomohiko Nakanishi, Kariya; Daido Ishii, Nagoya, and Koichi Mochizuki, Tsushima, all of Japan, assignors to Japan Spectroscopic Co. Ltd., Tokyo, Japan

Filed Aug. 31, 1978, Ser. No. 938,350
Claims priority, application Japan, Dec. 24, 1977, 52-156123
Int. Cl.[2] B01D *15/08*
U.S. Cl. 210—198 C **6 Claims**



1. In a high-speed micro liquid chromatography apparatus comprising an open tubular capillary column made of glass tube,

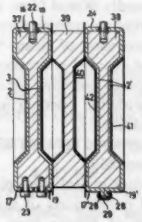
the improvement wherein the inner diameter of said glass tube is noyt more than 0.10 nm and the net inside capacity is not less than 0.5 μl, said glass tube being provided on the inner surface thereof with a stationary phase comprising a polymeric layer which is formed by a chemical bonding of at least one silane or its derivative with the inner surface of said glass tube.

4,207,189

FILTER PLATE ASSEMBLY FOR A FILTER PRESS

Matthias Geuenich, Langerwehe-Merode, Fed. Rep. of Germany, assignor to Eberhard Hoesch & Söhne GmbH & Co., Düren, Fed. Rep. of Germany

Filed Nov. 1, 1977, Ser. No. 847,651
Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652062
Int. Cl.[2] B01D *25/12*
U.S. Cl. 210—227 **11 Claims**



1. In a filter plate-and-diaphragm assembly including a filter plate having a depressed central portion and a peripheral portion surrounding the central portion and defining a sealing edge at each side of the plate as well as peripheral edge faces extending between the sealing edges, the central portion defining a depression at each side of the plate, and two pressure diaphragms each disposed at a respective side of the plate and presenting a cup-shaped central portion conforming to the depression at its associated side of the plate and a marginal

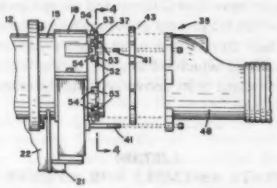
portion in sealing contact with the sealing edge at its associated side of the plate, the improvement wherein each said diaphragm is provided with two tongues each extending from a respective opposed edge of said marginal portion and via which said diaphragm is secured against at least two peripheral edge faces of said plate and both of said diaphragms are constituted by a one-piece member having a common portion defining one said tongue of each said diaphragm, and said assembly further comprises first attachment means securing said common portion to the peripheral edge face of said plate associated with each said one tongue, and second attachment means securing the other tongue of each said diaphragm against the peripheral edge face of said plate associated with said other tongues.

4,207,190

ROTARY VACUUM DISC FILTER

John A. Sheaffer, Wilton, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Filed Jan. 3, 1978, Ser. No. 866,577
Int. Cl.[2] B01D *33/08, 33/06*
U.S. Cl. 210—232 **8 Claims**



1. In a rotary disc vacuum filter having a bank of filter discs mounted on a center shaft assembly for rotation in a slurry tank through a filtration cycle wherein a filter cake is formed on said discs and filtrate is passed through said discs for discharge through a plurality of filtrate drainage channels in said center shaft assembly, said filter discs each comprising a series of filter sectors having filtrate flow connections with said filtrate channels, and valve means for controlling flow of filtrate from said filter channels outwardly of said filter, and including a stationary bridge plate having an opening through which said filtrate is discharged, the provision of means for interrupting filtrate flow from a selected channel which comprise,

a. outlet port openings provided for said filtrate channels to communicate with the opening in said bridge plate for discharging said filtrate,

b. a wear plate interposed between said bridge plate and said central shaft assembly,

c. inlet port openings in said wear plate in registered alignment with said outlet ports of said filtrate channels for permitting flow of filtrate from said filtrate channels through said valve means in accordance with the position of said filtrate channels relative to said stationary bridge plate and

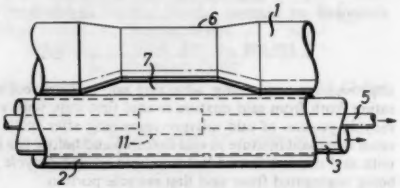
d. means for selectively interrupting the flow of filtrate from a channel outlet port through an adjacent aligned opening in the adjacent wear plate and comprising a sealing plate member, positioning means arranged partially about said outlet port openings for receiving said sealing plate to seal said aligned ports, and means detachably securing said plate to said positioning means in said sealing position.

4,207,191

ANTI-POLLUTION BOOM

Michael G. Webb, Wootton Bridge, England, assignor to The British Petroleum Company Limited, Middlesex, England

Filed Jan. 23, 1979, Ser. No. 5,789
Claims priority, application United Kingdom, Feb. 4, 1978, 04550/78
Int. Cl.[2] E02B *15/04*
U.S. Cl. 210—242 S **12 Claims**



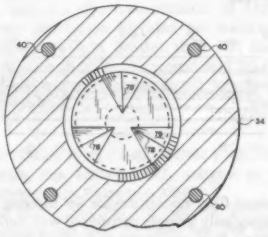
1. A barrier for the containment and recovery of oil spilt on water, the barrier comprising an elongate, flexible, buoyant, inflatable air chamber having a plurality of sections of reduced diameter, an elongate, flexible, inflatable ballast water chamber; an elongate, flexible oil and water discharge tube; and an elongate membrane, one end of the membrane being connected to the exterior of the air chamber and the other to the exterior of the ballast water chamber or the oil water discharge tube to form a gallery; the buoyant air chamber and the oil and water discharge tube being joined to the ballast water chamber in side-by-side relationship; the chambers, tube and membrane being so positioned relative to one another that when in use on oil polluted water the buoyant air chamber and the ballast water chamber together form a barrier for oil spilt on water except in the sections of reduced diameter of the buoyant air chamber; these sections and the ballast water chamber defining a series of weirs for oil and water to pass into the gallery; the oil and water discharge tube being provided with means to remove oil and water from the gallery.

4,207,192

HOLLOW FILAMENT SEPARATORY MODULE AND METHOD OF FABRICATION

Myron J. Coplan, Natick; Robert D. Burchesky, Dedham, and Robert E. Sebring, Westwood, all of Mass., assignors to Albany International Corp., Menands, N.Y.

Filed Sep. 19, 1978, Ser. No. 943,738
Int. Cl.[2] B01D *13/00*
U.S. Cl. 210—321 R **10 Claims**



1. A hollow filament separatory module including in combination a bundle of filaments consisting of a plurality of layers of semi-permeable hollow filaments with each of said layers being disposed in a helix, a pressure resistant enclosure for said bundle, first and second end plates with said enclosure therebetween, open ends of said filaments, main portions of said fila-

ments, means for isolating said open ends from said main portions, first flow means for flowing fluid in contact with the outer surfaces of said filaments at the main portions thereof, second flowing means for flowing fluid within said hollow filaments and through the open ends thereof, said second flow means including a potting compound encasing said open ends, a collection chamber communicating adjacent said potting compound and access surface means formed in said potting compound wherein said open ends of said fiber appear, the sum of the area of said access surface means when projected upon a plane perpendicular to the direction of internal pressure forces against the potting compound shall be less than 50% of the cross section of the non-access portions of said compound parallel to said plane.

4,207,193

METHODS AND COMPOSITIONS FOR REMOVING ASPHALTENIC AND PARAFFINIC CONTAINING DEPOSITS

William G. F. Ford, and Tommy R. Gardner, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 24, 1978, Ser. No. 889,694
Int. Cl.[2] E21B *43/25, 43/28*
U.S. Cl. 252—8.55 B **19 Claims**

1. A one-step method for removing asphaltenic and paraffinic containing deposits from surfaces comprising contacting said deposits with an aqueous composition containing essentially of:

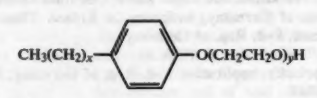
an aqueous carrier liquid present in said composition in an amount in the range of from about 85% to about 97% by weight;

a hydrocarbon solvent which is dispersed in said aqueous carrier liquid in an amount in the range of from about 3% to about 9% by weight of said composition wherein said hydrocarbon solvent is selected from the group consisting of benzene, xylene, toluene, naphtha, kerosene and mixtures thereof,

a base selected from the group consisting of ammonium hydroxide, organic bases and mixtures thereof wherein said organic bases are selected from the group consisting of pyridine, morpholine, and primary, secondary and tertiary amines defined by the general formula:

wherein R, R′ and R″ represent members selected from the group consisting of hydrogen, alkyl radicals having 1 to 4 carbon atoms, alkylamine radicals having from 1 to 4 carbon atoms, cycloalkyl radicals having 3 to 6 carbon atoms and mixtures thereof, said base being dispersed in said aqueous carrier liquid in an amount in the range of from about 0.44% to about 2.5% by weight of said composition; and

a surfactant having the general formula:



wherein x has a value ranging from about 2 to about 11 and y has a value ranging from about 10 to about 40 and mixtures thereof, said surfactant being dispersed in said aqueous carrier liquid in an amount in the range of from about 0.44% to about 4% by weight of said composition.

4,207,194

CHEMICAL WASH WITH FLUID LOSS CONTROL

James R. Sharpe, Houston, Tex., and Dustin L. Free, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 807,718, Jun. 17, 1977, Pat. No. 4,127,174.
This application Jun. 8, 1978, Ser. No. 913,787
Int. Cl.[2] E21B *21/00*
U.S. Cl. 252—8.55 B **5 Claims**

1. A watery-thin chemical wash composition suitable for use as a pre-flush to cement in well cementing operations, said wash containing water and as an active surfactant component a water soluble reaction product of at least one of tri- or dialkanolamine, or mixture thereof, with at least one fatty acid and dispersed in said wash a heterogeneous mixture of distinct particles comprising both a first particulate oil soluble resin which is friable and a second particulate oil soluble resin which is pliable, wherein the size of said friable particles ranges from about 0.5 to about 300 microns and the size of said pliable resin particles ranges from about 0.05 to about 30 microns, in amounts effective to impart fluid loss control to said wash.

4,207,195

SULFURIZED OLEFIN ADDUCTS OF DIHYDROCARBYL PHOSPHITES AND LUBRICANT COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed May 12, 1978, Ser. No. 905,269
Int. Cl.[2] C10M *1/48;* C07G *17/00*
U.S. Cl. 252—46.6 **20 Claims**

1. A product obtained by the reaction of a dihydrocarbyl phosphite of the formula

wherein R and R′ are the same or different C_1–C_{30} hydrocarbyl groups with a sulfurized olefin in the presence of a free-radical or peroxide type catalyst for the said reaction.

11. A lubricant composition comprising a major proportion of a lubricant and an antiwear or antioxidant amount of a product obtained by the reaction of a dihydrocarbyl phosphite of the formula

wherein R and R′ are the same or different C_1–C_{30} hydrocarbyl groups with a sulfurized olefin in the presence of a free-radical or peroxide type catalyst for the said reaction.

4,207,196

STABILIZED COMPOSITIONS OF POLYMERS IN OIL

John H. Sudekum, Northfield, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Dec. 7, 1978, Ser. No. 967,445
Int. Cl.[2] C10M *1/32, 1/38*
U.S. Cl. 252—47.5 **6 Claims**

1. An oil composition comprising a mineral base oil, a copolymer of ethylene and an α-olefin and a material selected from the group consisting of a stabilizing amount of a (1) metal salt of alkyl dithiocarbamate in which said metal is alkyl metal of group 1A, selenium or tellurium or (2) an alkyl thiuram sulfide.

4,207,197

AGGLOMERATION PROCESS FOR MAKING GRANULAR DETERGENTS

Jerry E. Davis; Frank J. Mueller; Gerald W. Novosel, and Robert A. Staab, all of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Aug. 9, 1978, Ser. No. 932,107

Int. Cl.[2] C11D *3/075, 3/08, 3/395, 11/00*

U.S. Cl. 252—99 5 Claims

1. A process for preparing an agglomerated granular detergent composition comprising at least about 10% of an alkali metal polyphosphate, from about 50% to about 99.5% by weight of inorganic material selected from the group consisting of alkali metal polyphosphates, orthophosphates, silicates, carbonates, acetates, sulfonates and mixtures thereof and from about 0.5% to about 20% of an alkoxylated nonionic surfactant in which the agglomerating agent comprises an alkali metal silicate solution having a water content of from about 40% to about 75%, an average SiO_2:M_2O weight ratio of from about 1.6 to about 3.3, M being an alkali metal, said agglomerating agent containing from about 2% to about 20% based on the weight of agglomerating agent of a hydratable salt selected from the group consisting of alkali metal orthophosphates, chlorinated orthophosphates, polyphosphates, sulfates, and mixtures thereof, said granular detergent composition comprising a material providing hypochlorite ions in aqueous solution, said process comprising agitating one or more of said inorganic materials in the form of particulate components, contacting said particulate components with said agglomerating agent during said agitating, mixing said agglomerating agent with said one or more particulate components by continuing said agitating for a period of time sufficient to produce an agglomerated granular detergent composition and recovering said agglomerated detergent composition.

4,207,198

ELASTIC DETERGENT CAKE OF IMPROVED FOAMING POWER AFTER USE

Divaker B. Kenkare, South Plainfield, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Dec. 2, 1976, Ser. No. 746,998

Int. Cl.[2] C11D *9/30, 15/04*

U.S. Cl. 252—117 11 Claims

1. A hand squeezable, elastic, solid molded detergent product of improved form retaining ability and foaming power after use which is initially substantially anhydrous, and consists essentially of about 10 to 70% of an organic detergent selected from the group consisting of ammonium and lower alkanolammonium anionic organic detergent salts of detergent acids and mixtures of such anionic organic detergent salt(s) and amphoteric synthetic organic detergent(s), about 8 to 35% of gelatin and about 20 to 65% of a lower pluralhydric alcohol selected from the group consisting of lower di- and polyhydric alcohols and mixtures thereof, said anionic organic detergent acids being selected from the group consisting of higher fatty alcohol sulfuric acids, higher fatty acid monoglyceride sulfuric acids, higher alkylbenzene sulfonic acids, paraffin sulfonic acids, olefin sulfonic acids, higher fatty alcohol polyethylene oxide sulfuric acids, higher fatty alcohol polyethylene oxide sulfonic acids, alkylphenol polyethylene oxide sulfuric acids, alkylphenol polyethylene oxide sulfonic acids and higher fatty acids and mixtures thereof and the amphoteric synthetic organic detergent being selected from the group consisting of imidazolinium betaines, iminodipropionates and aminopropionates and mixtures thereof, which is sufficiently squeezable and elastic so that a 2 cm. thickness thereof can be pressed between a thumb and forefinger to a 1 cm. thickness and upon release of such pressure will return within five seconds to within 1 mm. of the 2 cm. thickness.

4,207,199

SOLID COLD BLEACH ACTIVATORS FOR DETERGENTS AND CLEANING AGENTS CONTAINING AN ACTIVE OXYGEN DONOR

Johannes Perner, Neustadt, and Herbert Helfert, Frankenthal, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 24, 1978, Ser. No. 927,045

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1977, 2733849

Int. Cl.[2] C11D *10/00*

U.S. Cl. 252—174.13 3 Claims

1. A solid cold bleach activator formulation for a detergent to which an inorganic per-compound is admixed as a bleaching agent, which formulation consisting essentially of:

(a) a liquid compound containing acyl groups, said compound being selected from the group consisting of diacetylmethylamine, diacetylbutylamine, triacetylethanolamine, benzoyl chloride, acetic anhydride, diacetylethylamine, diacetylpropylamine, diacetylisopropylamine, diacetylisobutylamine, acetyl-propionyl-methylamine, di-propionyl-methylamine, acetyl-benzoyl-methylamine, triacetyl-iso-propanolamine, triacethylethanolamine, propionic anhydride, butyric anhydride, isobutyric anhydride, N-acetylpyrrolidone, N-acetylcaprolactam and mixtures thereof, said compound (a) being absorbed on

(b) a three-dimensionally crosslinked macro-molecular water-insoluble inorganic compound whose structure is characterized by silicon-oxygen bonds, the silicon being in an oxidation state of +4, aluminum-oxygen bonds or both types of bonds, said inorganic compound being selected from the group consisting of kiesel-guhr, a magnesium aluminum silicate, sodium aluminum silicate or calcium aluminum silicate, an activated silica, a silica aerogel and an aluminum oxide.

4,207,200

SOLUBLE COMPLEX FORMER FOR THE AFFINITY SPECIFIC SEPARATION OF MACROMOLECULAR SUBSTANCES, ITS PREPARATION AND ITS USE

Werner Müller, Rolandstrasse 31; Antonin Eigel, Am Meierteich 15; Hans-Jürgen Schuetz, Geschwister Scholl Str. 1, all of 4800 Bielefeld, and Hans Bünemann, Am Pulverbach 8, 4803 Steinhagen, all of Fed. Rep. of Germany

Filed Mar. 20, 1978, Ser. No. 888,397

Claims priority, application Fed. Rep. of Germany, May 8, 1978, 2712344

Int. Cl.[2] B01D *15/08;* G01N *31/08*

U.S. Cl. 252—184 17 Claims

1. Soluble complex former for the affinity-specific separation of macromolecular substances, especially biopolymers, such as nucleic acids, containing a soluble polyethyleneglycol having a molecular weight between 200 and 40,000, a soluble dextran or a soluble linear polyacrylamide, to which at least one base specific group for nucleic acid is covalently bound.

4,207,201

PROCESS FOR THE MANUFACTURE OF AN AQUEOUS IRON (III)-CHLORIDE-SULFATE SOLUTION

Achim Hartmann, Pulheim; Achim Kulling; Dieter Schinkitz, both of Leverkusen, and Edgar Klein, Odenthal-Osenau, all of Fed. Rep. of Germany, assignors to Kronos Titan GmbH, Leverkusen, Fed. Rep. of Germany

Filed Mar. 8, 1978, Ser. No. 884,424

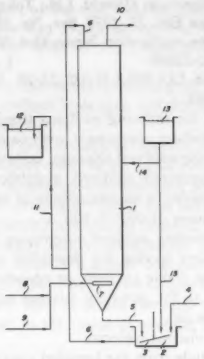
Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710969

Int. Cl.[2] C01G *49/10, 49/14;* C01B *17/45;* C02B *1/36*

U.S. Cl. 252—191 7 Claims

1. Process for the manufacture of an aqueous iron (III)-chloride-sulfate solution by the oxidation of iron (II) sulfate with chlorine in aqueous solution in a reactor comprising introducing chlorine into the reactor at an excess pressure of at least 1

bar, said reactor containing an iron (III)-chloride-sulfate solution of iron (II) sulfate which contains at least about 1% by weight bivalent iron, and said chlorine being introduced into said solution, maintaining this content of bivalent iron by passing the reaction solution continuously through the reactor and a dissolving vessel and adding solid iron (II) sulfate heptahydrate in the dissolving vessel, maintaining the oxidation temperature in the range of from about 40° to 70° C. by the suitably dosed addition of an effective amount of iron (II) sulfate heptahydrate to maintain the temperature in the range of from 40° to 70° C. by compensation between the heat of solution used up in the dissolving of the iron (II) sulfate heptahydrate and the heat of reaction produced in the oxidation; the maximum residence time of the reaction solution in the reactor being less than 4 hours.



4,207,202

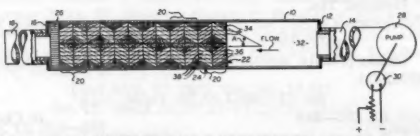
APPARATUS FOR MAKING SMALL BUBBLE FOAM

Howard W. Cole, Jr., 12 Vale Dr., Mountain Lakes, N.J. 07046

Filed Jun. 5, 1978, Ser. No. 912,219

Int. Cl.[2] B01F *3/04, 5/06*

U.S. Cl. 252—359 E **13 Claims**



1. Apparatus for making foam from ingredients comprising air, water and surfactant, including pump means for supplying air, water and surfactant, mixing means connected to said pump means for mixing said ingredients and comprising a tubular chamber having a longitudinal axis and a plurality of discrete sections in successive relation lengthwise thereof, said sections comprising a first and second set of sections with the sections of each set alternating with one another, each of said sections of said first set having a multiplicity of passages formed by walls therein that commonly diverge from the longitudinal axis in a direction toward the downstream end of said chamber, and said multiplicity of passages increasing in cross-section as said passages diverge thereby causing said ingredients to diverge, each of said sections of said second set comprising a multiplicity of passages formed by walls therein that commonly converge toward the longitudinal axis in a direction toward the downstream end of said chamber, and said multiplicity of passages of said second set decreasing in cross-section as they converge thereby causing said ingredients to converge, walls of alternating sections being located to cause the flow to deflect at acute angles to the longitudinal axis of said chamber, with changes in cross-section resulting in changes in the velocity of flow and consequent changes in static pressure with resulting turbulence and foaming of said ingredients, and a delivery conduit for the foamed ingredients connected to the downstream end of said chamber and from which the foam is discharged to a place of use.

4,207,203

URIC ACID STANDARD SOLUTIONS

E. Melvin Gindler, Rockford, Ill., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Continuation of Ser. No. 896,731, Apr. 17, 1970, abandoned. This application May 4, 1979, Ser. No. 36,240

Int. Cl.[2] G01N *31/06, 31/14;* C09K *15/18, 3/00*

U.S. Cl. 252—408 **8 Claims**

1. A stable solution useful as a standard in the determination of uric acid, said solution consisting essentially of water, a buffer sufficient to maintain the pH value of the solution at about 6–7, and a known concentration of uric acid present as a soluble salt of the pH-controlling buffer component, said component having a pK value of about 5–7.5, and said solution having excluded therefrom bases with a pK above about 8.

4,207,204

PASSIVATION OF METALS ON CRACKING CATALYST WITH A CRUDE ANTIMONY TRIS(O,O-DIHYDROCARBYL PHOSPHORODITHIOATE)

Dwight L. McKay, and Brent J. Bertus, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 926,699, Jul. 25, 1978, Pat. No. 4,166,806. This application Mar. 15, 1979, Ser. No. 20,784

Int. Cl.[2] B01J *21/20, 27/18;* C10G *9/16, 11/06*

U.S. Cl. 252—411 R **10 Claims**

1. A method for passivating a contaminating metal upon a hydrocarbon cracking catalyst, which comprises contacting said catalyst with a crude antimony tris(O,O-dihydrocarbyl phosphorodithioate).

4,207,205

REDUCTION OF $TiCl_4$ WITH REDUCING AGENTS MODIFIED WITH LEWIS BASES

Harry J. Wristers, Baytown, Tex., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 622,956, Oct. 16, 1975, abandoned. This application Feb. 17, 1978, Ser. No. 878,854

Int. Cl.[2] C08F *4/64*

U.S. Cl. 252—429 B **13 Claims**

1. In a process for preparing a $TiCl_3$ catalyst complex for stereoregular polymerization of alpha-olefins, wherein said catalyst complex is prepared by reducing $TiCl_4$ in a non-reactive solvent with an aluminum alkyl to obtain a brown reduced $TiCl_3$ solid compound and activating the brown reduced $TiCl_3$ solid compound by conversion to the purple form, the improvements comprising:

(1) in said reduction step

(a) contacting $TiCl_4$ with a dihydrocarbon ether-/aluminum alkyl complex at a temperature within the range of about −80° to about +50° C., wherein said aluminum alkyl compound is selected from aluminum triethyl, diethyl aluminum chloride and mixtures of diethyl aluminum chloride and ethyl aluminum dichloride, and said complex being obtained by complexing said aluminum alkyl with an excess of said ether, wherein the mole ratio of ether:aluminum alkyl:$TiCl_4$ is in the range of about 1.01–10:1–5:1–20 and the ratio of dihydrocarbon ether to aluminum alkyl is in the range of about 1.01 to 5:1;

(b) warming the resulting reaction mixture of (a) to about 25°–90° C. and maintaining said temperature for about ½ to about 6 hours; and

(a) in said activating step, contacting said brown reduced

solid $TiCl_3$ complex with one of $TiCl_4$ or a chlorinated hydrocarbon for a time and temperature sufficient to convert the brown $TiCl_3$, to the purple form.

4,207,206

CATALYST SYSTEM

Nikolaous K. Balint, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Sep. 29, 1978, Ser. No. 947,086
Int. Cl.[2] C08F *4/64*
U.S. Cl. 252—429 B 22 Claims

1. A catalyst composition for the polymerization of propylene or mixtures of propylene and copolymerizable alpha-olefins, which produces low amounts of n-hexane-soluble polymer, comprising a titanium trihalide; an organoaluminum compound selected from the group consisting of dialkyl aluminum halide, trialkyl aluminum, a mixture thereof, and a mixture of trialkyl aluminum with alkyl aluminum dihalide; and a Group Va or Group VII oxygen mineral acid in a molar ratio to titanium trihalide from about 0.005 to 1 to about 0.7 to 1.

4,207,207

HYDROCARBON SOLUBLE MAGNESIUM COMPOSITIONS OF HIGH MAGNESIUM CONTENT

Ramiro Sanchez, Pasadena; Loyd W. Fannin, Dickinson, and Dennis B. Malpass, LaPorte, all of Tex., assignors to Texas Alkyls, Inc., Westport, Conn.

Filed Jan. 17, 1979, Ser. No. 4,136
Int. Cl.[2] B01J *31/12*
U.S. Cl. 252—431 R 27 Claims

1. A hydrocarbon-soluble composition of matter comprising dimethylmagnesium and di-n-propylmagnesium at a methyl:n-propyl alkyl group ratio of from about 0.2:1 to about 5:1.

4,207,208

METHOD FOR REGENERATION AND ACTIVITY IMPROVEMENT OF SYNGAS CONVERSION CATALYST

Stanley J. Lucki, Runnemede, and James A. Brennan, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,590
Int. Cl.[2] B01J *29/06;* B01D *15/06*
U.S. Cl. 252—455 Z 16 Claims

1. A method for treating either a fresh or spent single particle iron-containing syngas conversion catalyst composition prepared by forming a mixture of a water insoluble iron derivative of an organic compound, a matrix and an acidic crystalline aluminosilicate zeolite having a silica-to-alumina ratio of at least 12, a pore size greater than about 5 Angstrom units and a constraint index of about 1 to 12 which comprises:

(a) oxidizing said catalyst in a stream of flowing air at a pressure in the range of 0–200 psig for about 0.1 to 16 hours at a temperature within the range of about 500°–1,000° F.,

(b) treating the product from step (a) in a stream of flowing hydrogen at a pressure in the range of 0–200 psig for about 0.1 to 16 hours at a temperature within the range of about 500°–1,000° F.,

(c) treating the product from step (b) in air at a pressure in the range of 0–200 psig for about 0.1–16 hours at a temperature within the range of about 500°–1,000° F., and

(d) treating the product from step (c) with synthesis gas at atmospheric pressure at temperatures of about 550°–650° F. for about 0.5 to 24 hours.

4,207,209

SINTERED CATALTYIC OR ABSORBENT METALLIC PRODUCT AND METHOD FOR SINTERING METALLIC POWDERS

Shinpei Matsuda, Toukaimura; Youichi Sakuta, Sapporo; Tomoichi Kamo; Shigeo Uno, both of Hitachi; Masato Takeuchi, Katsuta; Jinichi Imahashi, Hitachi; Hideo Okada, Hitachi; Akira Kato, Hitachi, and Fumito Nakajima, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 25, 1978, Ser. No. 954,449
Claims priority, application Japan, Oct. 26, 1977, 52-127626; Mar. 1, 1978, 53-22045
Int. Cl.[2] B01J *21/06, 23/28, 23/88*
U.S. Cl. 252—462 24 Claims

1. A method for sintering oxidized titanium and an active catalytic or adsorbent component with oxidized molybdenum as a binder for the oxidized titanium, comprising the steps of:

depositing vaporized oxidized molybdenum on oxidized titanium powder in an atmosphere of molybdenum vapor at temperatures of 460° to 650° C.,

forming a powdery mixture comprising the oxidized titanium powders having the deposited oxidized molybdenum and the active catalytic or adsorbent component,

adding water to the powdery mixture sufficient to make a viscous material,

kneading the viscous material,

shaping an article from the kneaded viscous material, and

calcining the article to produce a sintered product wherein the oxidized molybdenum binds the oxidized titanium together.

4,207,210

PROCESS FOR PREPARING AN ETHYLENE OXIDE CATALYST

Peter A. Kilty, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 504,220, Sep. 9, 1974, abandoned. This application Apr. 8, 1976, Ser. No. 675,034
Claims priority, application United Kingdom, Oct. 26, 1973, 49962/73
Int. Cl.[2] B01J *21/04, 23/04, 23/50*
U.S. Cl. 252—463 10 Claims

1. A process for preparing a catalyst article for the production of ethylene oxide which comprises;

(a) impregnating a porous refractory support having a surface area from about 0.03 m^2/g to about 10 m^2/g with an aqueous solution of a salt of a higher alkali metal selected from the group consisting of potassium, rubidium, cesium or mixtures thereof in such concentration as to produce in the final product a higher alkali metal concentration from about 0.25 to about 16 milligram equivalent weights per kilogram total catalyst for each square meter of support surface area ((mgew/kg)/(m^2/g));

(b) at least partially drying the product of step (a) at a temperature between about 100° C. and about 200° C. sufficiently to allow the impregnation of step (c);

(c) recontacting the higher alkali metal impregnated support with a liquid phase containing dissolved therein a silver compound in an amount sufficient to deposit from about 1 to about 25 percent by weight of silver on the support surface, and

(d) thermally treating the resulting product in the presence of a reducing agent to convert the silver compound to silver metal.

4,207,211

CATALYST FOR STEAM REFORMING OF HYDROCARBONS AND PROCESS OF PREPARING THE CATALYST

Karl J. Russ, Louisville, Ky., and Donald R. Broughton, New Albany, Ind., assignors to United Catalysts Inc., Louisville, Ky.

Continuation-in-part of Ser. No. 638,505, Dec. 8, 1975. This application May 19, 1978, Ser. No. 907,713

Int. Cl.[2] B01J *21/04, 23/78, 23/84*

U.S. Cl. 252—466 J 15 Claims

1. A catalyst for the steam reforming of normally liquid hydrocarbons to produce hydrogen and the oxides of carbon, which consists essentially of:

(a) a low surface area refractory support consisting essentially of aluminum oxide in the alpha phase and having a surface area, as measured by nitrogen adsorption of less than 15 square meters per gram, and having catalytically active constituents impregnated thereon;

(b) said catalytically active constituents consisting essentially of nickel oxide in a weight concentration, expressed as the metal, of from 5 to 30% by weight and the oxides of manganese and iron, in which the ratio of manganese to iron, expressed as the metal by weight, does not exceed 2:1;

(c) the improvement wherein said catalytically active constituents are not chemically bound to said refractory support, having been impregnated on to said support from a heat decomposable water soluble solution of their metal salts, followed by calcination of said salts to convert said salts to their oxides by calcination at a temperature not in excess of 1200° F.

4,207,212

CATALYST FOR CARBONYLATION OF AROMATIC NITROCOMPOUNDS

Boris K. Nefedov, ulitsa Shosseinaya, 9, kv. 64, Moscow; Jury I. Dergunov, prospekt Pobedy, 3, kv. 39; Anatoly I. Rysikhin, prospekt Pobedy, 3, kv. 7, both of Dzerzhinsk Gorkovskoi oblasti; Vladimir I. Manov-Juvensky, ulitsa Angarskaya, 1, korpus 3, kv. 72, Moscow; Georgy P. Balabanov, ulitsa Tereshkovoi, 64-a, kv. 58, Dzerzhinsk Gorkovskoi oblasti, and Khakberdy O. Khoshdurdyev, ulitsa Ostrovityanova, 33-a, kv. 159, Moscow, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,750

Int. Cl.[2] B01J *23/28, 23/44, 23/58, 23/64*

U.S. Cl. 252—468 3 Claims

1. A catalyst for carbonylation of aromatic nitrocompounds consisting of 1.6 to 4.0% by weight of an oxide of a metal selected from the group consisting of magnesium, calcium and zinc; 48.8 to 77.0% by weight of palladium oxide and 49.6 to 19% by weight of molybdenum oxide.

4,207,213

ZERO-VALENT RHODIUM CATALYSTS AND PROCESS OF PREPARATION

Jan G. Noltes, Huis Ter Heide; Gerard van Koten, Bilthoven, both of Netherlands, and Murray S. Cohen, Convent Station, N.J., assignors to Borg-Warner Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 827,278, Aug. 24, 1977, Pat. No. 4,152,303. This application Feb. 8, 1979, Ser. No. 10,459

Int. Cl.[2] B01J *23/58*

U.S. Cl. 252—474 12 Claims

1. A process for the preparation of a zero-valent rhodium catalyst comprising reacting a hydrocarbyl-lithium compound with a rhodium halide complex of the formula RhX_aL_b where X is chlorine or bromine, L is an olefinic hydrocarbon ligand, a is 1–3 and b is 1–4, in a hydrocarbon solvent.

4,207,214

2-OXABICYCLOOCTANE DERIVATIVES IN PERFUME COMPOSITIONS

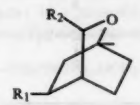
Mark A. Sprecker, Sea Bright; Frederick L. Schmitt, Holmdel; Manfred H. Vock, Locust; Joaquin F. Vinals, Red Bank, all of N.J., and Jacob Kiwala, Brooklyn, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 953,128, Oct. 20, 1978, Pat. No. 4,195,099. This application Jun. 7, 1979, Ser. No. 46,368

Int. Cl.[2] C11B *9/00*; A61K *7/46*

U.S. Cl. 252—522 R 18 Claims

1. A process for augmenting or enhancing the aroma of a perfume composition comprising the step of intimately admixing with a perfume base an organoleptic property augmenting or enhancing quanity of at least one cyclic chemical compound having the structure:



wherein R_1 is selected from the group consisting of hydrogen and methyl; R_2 is C_3–C_5 alkyl or alkenyl; and R_5 is hydrogen or C_1–C_4 acyl and wherein one of the dashed lines is a carbon-carbon single bond and the other of the dashed lines is a carbon-carbon double bond.

4,207,215

TILE AND GROUT CLEANER

Joseph A. Bolan, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Continuation of Ser. No. 859,511, Dec. 2, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,365

Int. Cl.[2] C11D *1/84, 3/28, 7/32*

U.S. Cl. 252—542 4 Claims

1. A composition for cleaning tile and grout consisting essentially of:

(a) from about 1.5 to 7 weight percent of an alkaline hydroxide or an ammonium salt of a member selected from the group consisting of nitrioltriacetic acid and alkaline polyamine polycarboxylic acids having the formula:

$$(HOOCCH_2)_2N[(CH_2)_xNCH_2COOH]_yCH_2COOH$$

wherein x and y may each independently be from 1 to 7, and wherein the weight percent is expressed on a free acid basis;

(b) from about 1.0 to 3.0 weight percent of an alkaline hydroxide selected from the group consisting of the hydroxides of potassium, sodium and ammonium, the amount of hydroxide being such as to combine with the sequestering agent to form a salt thereof, resulting in substantially no free hydroxide in the composition;

(c) from about 1.0 to 4.0 weight percent of 2-heptadecyl-1-carboxymethyl-1-)2-hydroxyethyl)-2-imidazolinium chloride; and

(d) the balance being water, wherein the composition is capable of existing as a thixotropic gel at room temperature and of forming a water-impermeable outer skin upon application of the composition to the tile or grout surface.

4,207,216

SCORCH INHIBITED VULCANIZABLE RUBBER COMPOSITIONS

Otto W. Maender, Copley, Ohio, assignor to Monsanto Company, St. Louis, Mo.

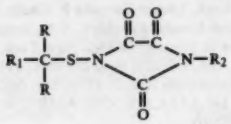
Filed Oct. 2, 1978, Ser. No. 948,118

Int. Cl.[2] C08F *8/34*

U.S. Cl. 260—5 15 Claims

1. A vulcanizable rubber composition comprising sulfur-vul-

canizable rubber, sulfur-vulcanizing agent, organic vulcanization accelerating agent and, in an amount effective to inhibit premature vulcanization, a compound of the formula



in which each R independently is alkyl of 1–5 carbon atoms, R_1 is alkyl of 1–12 carbon atoms, R_2 is hydrogen, alkyl of 1–12 carbon atoms, aryl of 6–10 carbon atoms, aralkyl of 7–10 carbon atoms or

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4,207,217

HEAT MELTING ADHESIVE

Giancarlo Guainazzi, Milan, and Italo Albini, Pavia, both of Italy, assignors to Chem-Plast S.p.A., Milan, Italy

Continuation of Ser. No. 774,004, Mar. 3, 1977, abandoned. This application Jun. 21, 1978, Ser. No. 917,630

Claims priority, application Italy, Dec. 20, 1976, 306354 A/76

Int. Cl.[2] C08G *69/26;* **C09J** *3/16, 3/26, 5/10*

U.S. Cl. 260—18 N **10 Claims**

1. a hot melt adhesive in the form of a continuous strand, suitable for feeding assembling machinery for footwear, hide and hide-like laminated articles, consisting of a polyamide resin having a softening point (as measured by the ring and ball method) higher than 194° C. and a hot melt viscosity at 220° C. of at least 31 poises, the polyamide resin being prepared by condensing, at a temperature of between 180° C. and 250° C.,

(1) an acid consisting of:

(a) a mixture of monomeric and polymeric fatty acids, having a monomer content of 5–10%, a dimer content 75–80%, and a higher polymer content of 10–15%, the mixture being prepared by polymerization of monocarboxylic acids having an unsaturated ethylene chain containing 8 to 24 carbon atoms and

(b) bicarboxylic acids, having the formula HOOC—R—COOH, wherein R is an aliphatic hydrocarbon radical having 6 to 10 carbon atoms, and/or esters thereof, in a proportion of at least 10% by weight of the mixture under (a) or aromatic bicarboxylic acids and/or esters thereof, in a proportion of at least 4% by weight of the mixture (a), with

(2) an essentially equivalent amount of a diamine reactant.

4,207,218

FRIABLE RUBBER BALES

August H. Jorgensen, Jr., Rocky River, and Martin E. Woods, Westlake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Mar. 27, 1978, Ser. No. 890,726

Int. Cl.[2] C08C *1/07;* **C08K** *3/24, 3/34, 3/36*

U.S. Cl. 260—23.7 M **16 Claims**

1. A friable bale of rubber comprising discrete particles of particulate rubber wherein a majority of the discrete rubber particles have therebetween a layer of at least one anti-cake material selected from the group consisting of inorganic dusting agents, metal salts of organic acids, and hard resins having a glass transition temperature above 40° C.; wherein said anti-cake is used at a level of from about 0.5 to about 20 parts by weight per 100 parts by weight of said particulate rubber; and wherein the bulk density of said friable bale is from about 1.3 to about two times the bulk density of the particulate rubber; and said increase in bulk density is achieved by molding the particulate rubber into a bale at a pressure of from about 20 psig to about 1000 psig and at a temperature of from about 25° C. to about 100° C. and a time under compression of from about 10 seconds to about 10 minutes.

4,207,219

PROCESS FOR THE PREPARATION OF PARTIAL ESTERS AND PARTIAL SALTS OF REACTION PRODUCTS OF NATURAL RESINIC ACIDS AND DICARBOXYLIC ACID COMPOUNDS

Albert Rudolphy, Wiesbaden-Biebrich, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Dec. 6, 1978, Ser. No. 967,020

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1978, 2802702

Int. Cl.[2] C08L *93/00*

U.S. Cl. 260—25 **10 Claims**

1. A process for the preparation of partial esters and partial salts with divalent metal compounds of reaction products of natural resinic acids and unsaturated dicarboxylic acid compounds having unsaturated dicarboxylic acid units which comprises the following steps:

(a) reacting at least one natural resinic acid with from 3 to 10% of an olefinically unsaturated dicarboxylic acid compound at a temperature of from 120° to 250° C.;

(b) partially neutralising the product of step (a) with from 0.1 to 2.5% of at least one calcium compound at a temperature within the range specified in step (a);

(c) partially esterifying the product of step (b) with from 10 to 30% of a polyhydric alcohol at a temperature of from 120° to 200° C.;

(d) reacting the product of step (c) with 5 to 20% of (i) a resol prepared by co-condensation of at least one phenol and at least one alkylphenol or (ii) a mixture of at least one phenolic resol and at least one alkylphenol resol at a temperature of from 140° to 200° C.; and

(e) continuing the reaction of step (d) at a temperature of from 240° to 280° C. to simultaneously complete partial salt formation and partial esterification, until the product has an acid number of from 20 to 50; the percentage in (a) to (d) being always by weight, relative to the weight of natural resinic acid.

4,207,220

HEAT CURABLE HOT-MELT ADHESIVES CONTAINING MODIFIED POLYETHYLENE

Darryl A. Godfrey, Longview, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 1, 1978, Ser. No. 939,093

Int. Cl.[2] C08L *93/04;* **B32B** *27/32*

U.S. Cl. 260—27 R **30 Claims**

1. An adhesive composition capable of being used as a hot melt adhesive wherein said adhesive composition consists essentially of a blend of

(a) about 90 to 50 percent by weight of at least one modified polyethylene having an acid number of at least 5 prepared by reacting polyethylene with a member selected from the group consisting of unsaturated polycarboxylic acid or anhydride,

(b) about 10 to 50 percent by weight of at least one rosin ester resin.

4,207,221

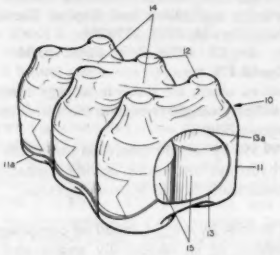
DEGRADABLE PLASTIC COMPOSITION CONTAINING UNSATURATED WAX

John W. Tobias, Perrysburg, and Lynn J. Taylor, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 731,486, Oct. 12, 1976, abandoned, which is a continuation of Ser. No. 288,750, Sep. 13, 1972, abandoned. This application Dec. 27, 1977, Ser. No. 864,977

Int. Cl.[2] C08L *91/06, 23/00;* B65D *75/00*

U.S. Cl. 260—28.5 R 33 Claims



1. As a composition of matter, an environmentally degradable plastic composition comprising a polyolefin having dispersed therein at least one unsaturated wax material as a readily autoxidizable organic substance.

4,207,222

AQUEOUS COATING AGENTS, IMPREGNATING AGENTS AND ADHESIVES

Rainer Blum, Ludwigshafen, and Matthias Marx, Bad Duerkheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 1, 1977, Ser. No. 820,774

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1976, 2636797

Int. Cl.[2] C08L *61/10*

U.S. Cl. 260—29.3 9 Claims

1. An aqueous coating agent for the cathodic electrocoating of electrically conductive surfaces in which the binder is a mixture of

(A) from 20 to 97% by weight of a cationic water-dispersible resin and

(B) From 3 to 80% by weight of a polydiene resin which per se is not water-dispersible.

4,207,223

PAPER SIZING AGENTS

Felix Schülde, Wulfen-Barkenberg, and Volker Kulisch, Gladbeck, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Herne, Fed. Rep. of Germany

Filed Nov. 7, 1978, Ser. No. 958,391

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1977, 2750070

Int. Cl.[2] C08L *33/02*

U.S. Cl. 260—29.6 WB 32 Claims

1. A paper sizing composition which comprises a mixture of

A. An alkaline aqueous dispersion of acid-group containing aliphatic hydrocarbon resins prepared by polymerizing a C_4-cut or a C_5-cut or mixtures thereof, obtained thermal cracking of a hydrocarbon stream, and modifying the product by addition thereto of an unsaturated polycarboxylic acid anhydride, wherein said resins have an acid number between 10 and 130 and are present in said dispersion with a solids content of 10–70%, and

B. an aqueous solution of a reaction product of a copolymer of an α, β-unsaturated polycarboxylic acid and a vinyl monomer with a basic reagent, wherein said solution has a solids content of 5–50 wt. %, and

wherein A and B are employed in a ratio of 99:1 to 1:99 relative to the solids content.

4,207,224

PLASTICS COMPOSITION

Donald R. Randell, Stockport; Thomas G. Hyde, Sale; Frank Lamb, Bury; Brian G. Clubley, Sale, and Boyce I. D. Davis, Cheadle, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Feb. 10, 1978, Ser. No. 876,604

Claims priority, application United Kingdom, Feb. 12, 1977, 5937/77

Int. Cl.[2] C08K *5/52*

U.S. Cl. 260—30.6 R 32 Claims

1. A composition comprising a chlorine-containing aliphatic polymer and (a) an ester of a phosphorus acid, and (b) an aromatic hydrocarbon-containing oligomer of the formula

$$(A)_a(-CH_2-)_b[-CH_2(OCH_2)_mOCH_2-]_c\cdot(-CH_2X)_d$$

wherein A is at least one aromatic hydrocarbon-containing radical wherein the aromatic hydrocarbon moiety is selected from the group consisting of benzene, naphthalene and diphenyl ether, X is a member selected from the group consisting of —OH, —OR,

phenoxy, benzyloxy and alkylphenoxy wherein R represents (1) a straight or branched chain alkyl having 1 to 12 carbon atoms, (2) cycloalkyl to 5 to 12 carbon atoms, (3) cycloalkenyl of 5 to 12 carbon atoms, or one of said groups (1) to (3) substituted by halogen, epoxy, nitro, amino, amido, ether, carboxyl, or ester groups, a is 2 to 20 but equals b+c+1, b is 0 to 19, c is 0 to 19, d is 0 to 2a and m is 0 to 10, there being at least two ($-CH_2X$) groups per molecule, each $-CH_2O-CH_2$ portion of the group $[CH_2(OCH_2)_mOCH_2]$ counting as ($-CH_2X$) for this purpose, the said groups ($-CH_2-$), $[-CH_2(OCH_2-)_mOCH_2-]$ and ($-CH_2X$) being bonded directly to a nuclear carbon atom of the aromatic hydrocarbon-containing radical.

4,207,225

ALKOXYALKYL PHOSPHATE PLASTICIZING COMPOSITIONS

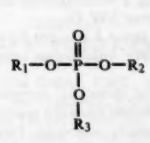
Harry H. Beacham, Langhorne, Pa., and James P. Hamilton, Trenton, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Mar. 6, 1979, Ser. No. 18,195

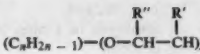
Int. Cl.[2] C08K *5/49;* C09K *3/28*

U.S. Cl. 260—30.6 R 38 Claims

1. A composition useful in plasticizing polyvinyl chloride resin to provide excellent heat stability, fire resistance and low temperature characteristics comprising from about 20 to about 50 parts by weight of tris(alkoxyalkyl)phosphate having the formula:

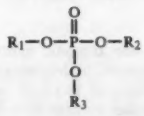


wherein R_1, R_2 and R_3 are alkoxyalkyl radicals having the formula:

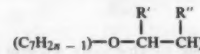


wherein
n is an integer from 1 to 18,
x is an integer from 1 to 2,
R′ is either hydrogen or an alkyl group, and
R″ is either hydrogen or an alkyl group;
in combination with from about 80 to about 50 parts by weight of another phosphate ester selected from the group consisting of triaryl phosphate alkyl diphenyl phosphate, trialkyl phosphate, trialkylphenyl phosphate, alkylphenyl/phenyl phosphate a mixed alkylphenyl/phenyl phosphate and mixtures thereof.

15. A heat stable, fire resistant composition having excellent low temperature characteristics consisting of polyvinyl chloride resin and as a plasticizer therefore from about 20 to about 50 parts by weight of a tris(alkoxyalkyl)phosphate having the formula:



wherein R_1, R_2 and R_3 are alkoxyalkyl radicals having the formula:



wherein
n is an integer from 1 to 18,
x is an integer from 1 to 2,
R′ is either hydrogen or an alkyl group, and
R″ is either hydrogen or an alkyl group; in combination with from about 80 to about 50 parts by weight of another phosphate ester selected from the group consisting of triaryl phosphate, alkyl diphenyl phosphate, trialkyl phosphate, tris(alkylphenyl)phosphate, alkylphenyl/phenyl phosphate and mixtures thereof; the amount of said plasticizer being from about 30 to about 150 parts by weight from each 100 parts by weight of polyvinyl chloride resin.

4,207,226

CERAMIC COMPOSITION SUITED TO BE INJECTION MOLDED AND SINTERED

Roger S. Storm, Williamsville, N.Y., assignor to The Carborundum Company, Nigara Falls, N.Y.

Filed Aug. 3, 1978, Ser. No. 930,635
Int. Cl.[2] C08L *61/06*
U.S. Cl. 260—38 **6 Claims**

1. A ceramic composition suited to be injection molded consisting of:
(a) from about 65 to about 90 percent by weight of particulate silicon carbide,
(b) from about 12 to about 18 percent by weight of a thermoplastic resin having a volatilization temperature between about 200° and about 500° C.,
(c) from about 2 to about 8 percent by weight of an oil or wax having a lower volatilizing temperature than said resin, and
(d) from about 0.1 to about 3.0 percent by weight of an organo-titanate selected from the group consisting of tetra (2-ethylhexyl) titanate; isopropyl, triisostearoyl titanate; tetraisopropyl, di(tridecylphosphito) titanate; titanium di(dioctylphosphate) oxacetate; titanium di(dioctylpyrophosphate) oxyacetate; isopropyl, isostearoyldiacryl titanate; isopropyl, tri(dioctylphosphate) titanate; isopropyl, tri(dioctylpyrophosphate) titanate; tetraisopropyl, di(dioctylphosphito) titanate, di(dioctylpyrophosphato) ethylene titanate, or mixtures thereof.

4,207,227

STABLE SUSPENSIONS OF INORGANIC FILLERS IN ORGANIC POLYHYDROXYL COMPOUNDS

Wulf von Bonin, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 856,075
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654746; Mar. 31, 1977, 2714291
Int. Cl.[2] C08K *9/04;* **C08L** *75/04*
U.S. Cl. 260—40 TN **23 Claims**

1. Suspensions which are stable in storage comprising:
(1) 0.5 to 80% by weight (based on the whole suspension) of an inorganic filler in
(2) 20 to 99.5% by weight (based on the whole suspension) of polyhydroxyl compounds having aliphatically and/or cycloaliphatically bound hydroxyl groups,
wherein,
(a) 0.01 to 35% by weight, based on component (2) of the suspension, of an olefinically unsaturated carboxylic acid and
(b) 0 to 25% by weight, based on component (2) of the suspension of other unsaturated monomers are grafted on the polyhydroxyl compounds by radical polymerization so that component (2) contains a total of from 0.005 to 15% by weight of carboxyl groups.

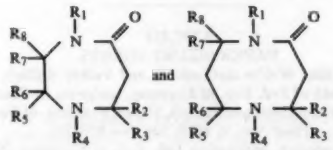
4,207,228

UV-LIGHT-STABILIZED COMPOSITIONS CONTAINING SUBSTITUTED 1,5-DIAZACYCLOALKANES, NOVEL COMPOUNDS AND SYNTHESIS THEREOF

John T. Lai, Broadview Heights, and Pyong N. Son, Akron, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 21, 1977, Ser. No. 835,069
Int. Cl.[2] C07D *243/12, 245/02;* **C08K** *5/34*
U.S. Cl. 260—45.8 N **16 Claims**

1. A class of mono-keto compounds comprising polysubstituted monocyclic 2-keto-1,5-diazacycloalkanes having a fixed three-carbon bridge between the N^1 and N^5 atoms of the diaza ring, and dimers and bis compounds thereof containing plural 1,5-diazacycloalkan-2-one moieties, said mono-keto compounds having a formula selected from



wherein,
said dimers and bis compounds consist essentially of two said moieties connected through N atoms thereof;
R_1 and R_4 independently represent hydrogen, alkyl having from 1 to about 24 carbon atoms, hydroxyalkyl having from 1 to about 12 carbon atoms, haloalkyl having from 1 to about 12 carbon atoms, cyanoalkyl having from 2 to about 12 carbon atoms, aminoalkyl or iminoalkyl having from 1 to about 12 carbon atoms, ether having from 3 to about 18 carbon atoms, hydroxyalkyl ether having from 4 to about 18 carbon atoms, cyanoalkyl ether having from 4 to about 18 carbon atoms, alkenyl having from 7 to about 14 carbon atoms, aralkyl having from 7 to about 14 carbon

atoms, carboalkoxy having from 1 to 7 carbon atoms, and cycloalkyl having from 6 to about 7 carbon atoms;

R_4 optionally also represents oxygen;

R_2 and R_3 independently represent alkyl having from 1 to about 24 carbon atoms, haloalkyl having from 1 to about 12 carbon atoms, cyanoalkyl having from 2 to about 12 carbon atoms, cycloalkyl having from 5 to about 14 carbon atoms, hydroxycycloalkyl having from 5 to about 14 carbon atoms, aminoalkyl or iminoalkyl having from 2 to about 12 carbon atoms, alkenyl or aralkyl having from 7 to about 14 carbon atoms, carboalkoxy having from 1 to 7 carbon atoms, and cyclizable alkylene together having from 5 to about 6 carbon atoms which alkylene together with the carbon atom of the diaza ring to which said alkylene is bound represents cycloalkyl having from 6 to about 7 carbon atoms; and,

R_5, R_6, R_7, and R_8 independently represent hydrogen, alkyl having from 1 to about 24 carbon atoms, haloalkyl having from 1 to about 12 carbon atoms, cyanoalkyl having from 2 to about 12 carbon atoms, aminoalkyl or iminoalkyl having from 1 to about 12 carbon atoms, alkenyl or aralkyl having from 7 to about 14 carbon atoms, and cyclizable alkylene, R_5, R_6 together, or R_7, R_8 together, having from 5 to about 6 carbon atoms which alkylene together with the carbon atom of the diaza ring to which said alkylene is bound represents cycloalkyl having from 6 to about 7 carbon atoms.

4,207,229
HINDERED PHENYL PHOSPHITES

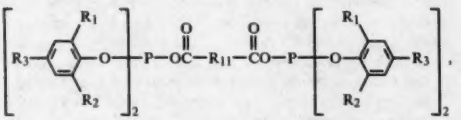
John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 710,063, Jul. 30, 1976, Pat. No. 4,094,855. This application May 8, 1978, Ser. No. 904,061

Int. Cl.[2] C07F 9/141

U.S. Cl. 260—45.8 NT **10 Claims**

1. A compound of the formula



wherein

R_1 and R_2 are independently lower alkyl or hydrogen, provided that only one of R_1 and R_2 is hydrogen,

R_3 is $-(A)_q-COOR_4$ or CN where

A is alkylene of 1 to 6 carbon atoms,

R_4 is alkyl of 1 to 24 carbon atoms, phenyl or alkyl substituted phenyl,

q is 0 or 1, and

R_{11} is alkylene of 1 to 34 carbon atoms, arylene or a direct bond.

5. A composition of matter comprising an organic polymeric synthetic material normally subject to thermal, oxidative and ultraviolet degradation stabilized with

(a) 0.005% to 5% of a stabilizing compound according to claim 1,

(b) 0 to 5% of a phenolic antioxidant,

(c) 0 to 5% of a thio co-stabilizer,

(d) 0 to 5% of a UV absorber, and

(e) 0 to 5% of a light stabilizer.

9. A composition according to claim 5 consisting essentially of

(i) polyolefin,

(ii) a stabilizing compound (a), and

(iii) 0.005 to 5% of a phenolic antioxidant selected from tetrakis[methylene 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate]methane, octadecyl 3-(3',5'-di-tert-butyl-4'-hydroxyphenyl)propionate, di-n-octadecyl-3,5-di-tert-butyl-4-hydroxybenzyl phosphonate, 2,6-di-t-butyl-4-methylphenol, and tris-2,4,6-(3,5-di-t-butyl-4-hydroxybenzyl)isocyanurate.

4,207,230
BLOCK COPOLYESTERS WHICH CRYSTALLIZE RAPIDLY

Peter Bier, and Rudolf Binsack, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

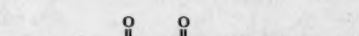
Filed Feb. 3, 1978, Ser. No. 875,047

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1977, 2706124

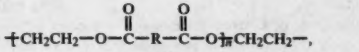
Int. Cl.[2] C08L 67/02, 71/02

U.S. Cl. 260—45.95 R **19 Claims**

1. A rapidly crystallizing thermoplastic block copolyester which has an intrinsic viscosity of at least 0.4 dl/g (in 1:1 phenol/tetrachloroethane at 25° C.) and which consists essentially of the following structural units:



(A)



(B)

(C)

in each case said structural units are bound into the copolyester chain via

wherein

R is the carboxyl free residue of an aromatic, cycloaliphatic or aliphatic dicarboxylic acid and at least 90 mol % of R is the residue of terephthalic acid,

n is a polymerization degree sufficiently high to give the defined ethylene glycol based polyester segment an intrinsic viscosity of at least about 0.2 dl/g (in 1:1 phenol/tetrachloroethane at 25° C. and 0.5% strength),

P is the reactive end group free residue of a polymer having: a glass transition temperature below about 0° C., reactive carboxyl, ester or hydroxyl end groups, and a molecular weight of about 400 to 1,000,000, and

D is the hydroxyl residue of a codiol having: 4 to 10 carbon atoms,

its hydroxyl groups separated by a 3 or 4 carbon atom branched or unbranched aliphatic residue, and either at least one secondary or tertiary hydroxyl group, or

two primary hydroxyl groups on an unsubstituted, monoalkyl substituted or dialkyl substituted residue wherein the substituents, if any, have a total of at least 4 carbon atoms,

said copolyester containing about 60 to 95 wt. % of structural units (A) and about 40 to 5 wt. % of structural units (B) based on the total weight of units (A) and (B) and about 10 to 0.5 mol % of structural units (C) based on the total mols of ethylene glycol residues in structural units (A).

4,207,231
ROSIN ACID ESTERS AS STABILIZERS FOR ASPHALT PREMIX

Judson E. Goodrich, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 11, 1979, Ser. No. 38,047

Int. Cl.[2] C08L 93/04, 95/00

U.S. Cl. 260—104 **9 Claims**

1. A method for improving the storage stability of a polymerizable mixture comprising a high molecular weight diol component, a low molecular weight chain stiffener component

and an asphalt component which comprises at least substantially increasing said stability by admixing into said mixture an effective amount of at least one rosin acid ester selected from the group consisting of C_2–C_5 alkane polyol rosin acid esters.

5. In a polymerizable mixture comprising a high molecular weight diol component, a low molecular weight chain stiffener component and an asphalt component, wherein said asphalt is present in the form of an unstabilized dispersion, solute or sol, the improvement comprising said mixture containing an effective amount of at least one stabilizing agent selected from the group consisting of C_2–C_5 alkane polyol esters of rosin acids.

4,207,232

SPECIFIC CHROMOGENIC ENZYME SUBSTRATES

Karl G. Claeson; Leif E. Aurell, both of Saro, and Leif R. Simonsson, Hisings-Backa, all of Sweden, assignors to AB Kabi, Stockholm, Sweden

Filed Nov. 16, 1977, Ser. No. 852,006

Claims priority, application Sweden, Dec. 1, 1976, 7613463

Int. Cl.[2] C07C *103/52*

U.S. Cl. 435—23 **14 Claims**

1. Chromogenic or fluorogenic enzyme substrates for serine proteases containing the amino acid sequence -Ile-A-Gly-Arg- wherein A is Asp or Glu substituted in the carboxylic group by esterification or amidation wherein the esters contain a short chain alkyl or hydroxy alkyl or alkyl-substituted aminoalkyl or cycloalkyl group containing a total of 2–6 carbon atoms, and the amides contain a mono or di-substituted short chain alkyl or hydroxy alkyl or alkyl-substituted aminoalkyl group containing a total of 1–6 carbon atoms, or a heterocyclic group in which the amido nitrogen forms part of a piperidine, a morpholine or a piperazine ring.

4,207,233

AZO DYES CONTAINING A THIAZOLE COMPONENT

Guenther Seybold, Ludwigshafen, and Heinz Eilingsfeld, Frankenthal, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

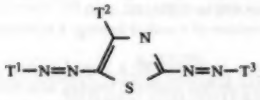
Filed Aug. 24, 1977, Ser. No. 827,340

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1976, 2640542

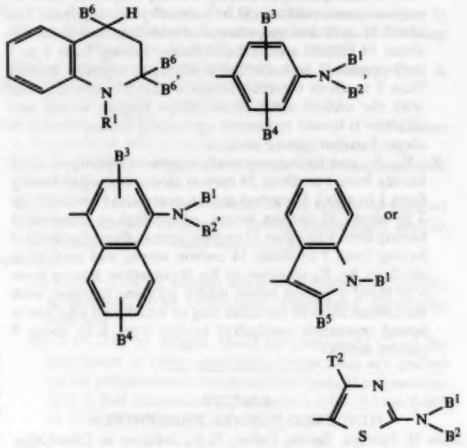
Int. Cl.[2] C09B *31/04, 31/08, 31/14*

U.S. Cl. 260—158 **10 Claims**

1. A dye of the formula



where T^1 is phenyl; phenyl substituted by fluorine, chlorine, bromine, methyl, trifluoromethyl, ethyl, alkoxy of 1 to 4 carbon atoms, phenylazo, cyano, nitro, methylsulfonyl, ethylsulfonyl, dialkylcarbamoyl where alkyl is of 1 to 4 carbon atoms, dialkylsulfamoyl where alkyl is of 1 to 4 carbon atoms, alkoxycarbonyl where alkoxy is of 1 to 8 carbon atoms, alkylmercapto where alkyl is of 1 to 4 carbon atoms or phenylmercapto; thiazolyl; thiazolyl substituted by alkyl of 1 to 4 carbon atoms, phenyl or cyano; benzthiazolyl; benzthiazolyl substituted by chlorine, bromine, methyl, ethyl, alkoxy of 1 to 4 carbon atoms or methylsulfonyl; thienyl; or thienyl substituted by alkyl of 1 to 4 carbon atoms, cyano, nitro, phenyl or alkoxycarbonyl where alkoxy is of 1 to 8 carbon atoms; T^2 is hydrogen; alkyl of 1 to 4 carbon atoms; alkyl of 2 to 4 carbon atoms substituted by chlorine, bromine, hydroxyl, alkoxy of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms, phenoxy, phenylmercapto, cyano, alkylsulfonyl of 1 to 4 carbon atoms, phenylsulfonyl, alkoxycarbonyl where alkoxy is of 1 to 4 carbon atoms, monoalkyl- carbamoyl where alkyl is of 1 to 4 carbon atoms, dialkyl-carbamoyl where alkyl is of 1 to 4 carbon atoms, monoalkyl-sulfamoyl where alkyl is of 1 to 4 carbon atoms or dialkylsulfamoyl where alkyl is of 1 to 4 carbon atoms; cyclohexyl; benzyl; phenylethyl; phenyl; or phenyl substituted by chlorine, bromine, alkyl of 1 to 4 carbon atoms, phenyl, hydroxyl, alkoxy of 1 to 4 carbon atoms, dialkylamino where alkyl is of 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, alkylmercapto of 1 to 4 carbon atoms or phenylmercapto, and T^3 is a radical of the formula



where B^1 is allyl, alkyl of 1 to 4 carbon atoms; alkyl of 2 to 4 carbon atoms which is substituted by hydroxyl, chlorine, bromine, cyano, alkoxycarbonyl where alkoxy is of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, acetyl, alkanoyloxy of 1 to 4 carbon atoms, alkylaminocarbonyloxy where alkyl is of 1 to 4 carbon atoms or phenylaminocarbonyloxy; cyclohexyl; benzyl; phenylethyl; phenyl; and methoxyphenyl; B^2 is allyl; alkyl of 1 to 4 carbon atoms; or alkyl of 2 to 4 carbon atoms which is substituted by hydroxyl, chlorine, bromine, cyano, alkoxycarbonyl where alkoxy is of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, acetyl, alkanoyloxy of 1 to 4 carbon atoms, alkylaminocarbonyloxy where alkyl is of 1 to 4 carbon atoms or phenylaminocarbonyloxy; B^1 and B^2 together with the nitrogen and pyrrolidino, piperidino or morpholino, B^3 is hydrogen, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms; B^4 is hydrogen, chlorine, bromine, alkyl of 1 to 4 carbon atoms, alkanoylamino of 1 to 4 carbon atoms, monoalkylsulfamoyl where alkyl is of 1 to 4 carbon atoms, or dialkylsulfamoyl where alkyl is of 1 to 4 carbon atoms; B^5 is methyl of phenyl and B^6 is hydrogen or methyl.

4,207,234

4-UNSUBSTITUTED AZETIDINONE DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

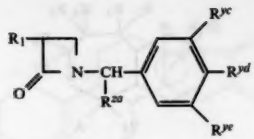
Takashi Kamiya, Suita; Yoshihisa Saito, Takarazuka; Masashi Hashimoto, Toyonaka; Osamu Nakaguti; Teruo Oku, both of Osaka; Youichi Shiokawa, Takatsuki; Takao Takaya, Sakai; Tadaaki Komori, Takatsuki; Tsutomu Teraji, Toyonaka; Keiji Hemmi, Kyoto, and Hisashi Takasugi, Osaka, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 694,891, Jun. 10, 1976, abandoned, which is a continuation-in-part of Ser. No. 593,668, Jul. 7, 1975, abandoned. This application Dec. 7, 1977, Ser. No. 858,375

Int. Cl.[2] C07D *205/08, 403/12, 401/12, 409/12*

U.S. Cl. 260—239 A **4 Claims**

1. An azetidinone compound substantially free of other azetidinones, and having the formula:



wherein:

R_1 is amino or acylamino excepting 2-[4-(3-amino-3-carboxypropoxy)phenyl]-2-hydroxyiminoacetamido, the acyl moiety of the acylamino group consisting of a carboxylic acid acyl or a benzenesulfonyl;

R^{Yc} is hydrogen, amino, nitro, halogen, alkoxy containing up to 6 carbon atoms, or alkylthio containing up to 6 carbon atoms;

R^{Yd} is hydrogen, hydroxy, alkyl containing up to 6 carbon atoms, alkylthio containing up to 6 carbon atoms, or benzyloxy;

R^{Ye} is hydrogen, halogen, alkoxy containing up to 6 carbon atoms, or alkylthio containing up to 6 carbon atoms; and

R^{za} is carboxy, a pharmaceutically acceptable salt or as ester thereof,

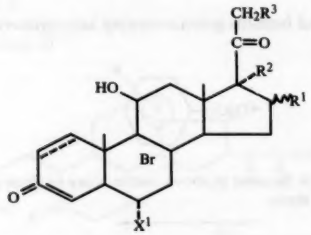
excepting 2-(4 -hydroxyphenyl)-2-(2-oxo-3-(2-hydroxyimino-2-(4-hydroxyphenyl) acetamido-1-azetidinyl) acetic acid.

4,207,235
SELECTIVE EPOXIDATION OF STEROIDAL BROMOHYDRINS

George B. Howarth, Springfield, Mo., and Richard D. Stacy, Boulder, Colo., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Jan. 12, 1979, Ser. No. 2,820
Int. Cl.[2] C07J *71/00*
U.S. Cl. 260—239.55 R 24 Claims

1. Process for preparing a 9,11-epoxide which comprises reactively contacting a a compound represented by the formula



(I)

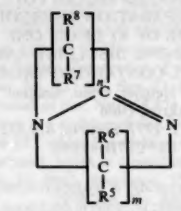
wherein

X^1 is hydrogen, fluoro or chloro;

R^1 is hydrogen, α-methyl or β-methyl when R^2 is hydroxy or acyloxy of 2–12 carbon atoms or R^1 and R^2 together are 16α,17α-isopropylidenedioxy;

R^3 is an acyloxy group of 2–12 carbon atoms; and

the dotted line between C-1 and C-2 represents an an optional additional bond with a compound represented by the formula



(II)

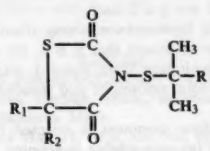
wherein R^5, R^6, R^7 and R^8 are independently hydrogen or alkyl of 1–4 carbon atoms, n is an integer of 2 through 7 and m is an integer of 2 through 4.

4,207,236
3-(TERT-ALKYLTHIO)-1,3-THIAZOLIDIN-2,4-DIONE

Mark D. Wolfinger, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 854,092, Nov. 23, 1977, Pat. No. 4,165,417.
This application Feb. 16, 1979, Ser. No. 12,624
Int. Cl.[2] C07D *277/04*
U.S. Cl. 548—183 5 Claims

1. A compound of the formula



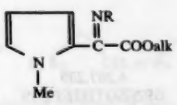
in which R is alkyl of 1–9 carbon atoms, and R_1 and R_2 independently are hydrogen, alkyl of 1–8 carbon atoms or phenyl.

4,207,237
PREPARATION OF PYRROLE-2-ACETATES

John R. Carson; Richard J. Carmosin, both of Norristown, and Anthony T. Stefanski, Bethlehem, all of Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 789,310, Apr. 20, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,440
Int. Cl.[2] C07D *207/32*
U.S. Cl. 260—326.2 6 Claims

1. A process of preparing a loweralkyl 1-methylpyrrole-2-acetate which comprises reducing a loweralkyl α-imino-1-methylpyrrole-2-acetate having the formula:



wherein: alk is loweralkyl; and

R is a member selected from the group consisting of hydrogen, loweralkyl, cyclopentyl, cyclohexyl, phenyl and phenyl substituted with from one to three substituents each selected from the group consisting of loweralkyl, loweralkyloxy and halo;

by the action of sodium dithionite as the reducing agent.

4,207,238

HYDROXYL-TERMINATED LIQUID POLYMERS AND PROCESS FOR PREPARATION THEREOF USING A MIXTURE OF AT LEAST ONE HYDROXYL-CONTAINING DISULFIDE AND AT LEAST ONE HYDROXYL-CONTAINING TRISULFIDE

Jack C. Gilles, Shaker Heights, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 1, 1977, Ser. No. 829,831
Int. Cl.[2] C07D 403/02
U.S. Cl. 260—326.25 17 Claims

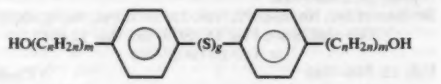
1. A process for preparing a hydroxyl-terminated liquid polymer having an aliphatic polymeric backbone, said process comprising thermal polymerization in a single step of

(1) at least one vinylidene monomer having at least one terminal $CH_2{=}C<$ group, together with

(2) at least one hydroxyl-containing disulfide having the formula

$$HO(C_nH_{2n}O)_m(C_nH_{2n})_p{-}(S)_g{-}(C_nH_{2n})_p(OC_nH_{2n})_mOH$$

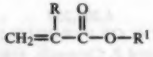
or



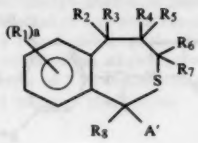
wherein m is an integer from 0 to 10, n and p are integers from 1 to 10, and g is 2, and

(3) at least one hydroxyl-containing trisulfide having the formulas above, except that g is 3, the amount of said trisulfide constituting from about 1 wt.% to about 25 wt.% of the total amount of said trisulfide and disulfide, wherein

(4) said vinylidene monomer is selected from the group consisting of (a) monoolefins containing 2 to 14 carbon atoms, (b) dienes containing 4 to 10 carbon atoms, (c) vinyl and allyl esters of carboxylic acids containing 2 to 8 carbon atoms, (d) vinyl and allyl ethers of alkyl radicals containing 1 to 8 carbon atoms, and (e) acrylic acids and acrylates having the formula



said R being hydrogen or an alkyl radical containing 1 to 3 carbon atoms, and R^1 being hydrogen or an alkyl radical containing 1 to 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical containing 2 to 12 carbon atoms.



wherein

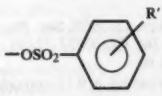
R_1 is the same or different and is selected from the group consisting of alkyl of one through three carbons, inclusive, alkoxy of one through three carbons, inclusive, trihaloalkyl of one to two carbons, hydroxy, halo, trihaloalkoxy of one or two carbon atoms and o-methylenedioxy with the proviso that at least one R_1 is hydroxy, alkoxy of o-methylenedioxy;

a is one through three;

R_2 through R_7 are the same or different and are selected from the group consisting of hydrogen, alkyl of one through three carbons, inclusive, hydroxy, alkoxy of one through three carbons; phenyl; halo; cycloalkyl of three through six carbons when R_2 and R_3, or R_4 and R_5, or R_6 and R_7 are taken together with the carbon to which they are attached; cycloalkyl of four through seven carbons when R_2 and R_4 or R_4 and R_6 are taken together with the carbons to which they are attached; and cycloalkyl of five or six carbons, with the overall proviso that no more than one ring may be attached to any one carbon and that at least two of R_2through R_7 are hydrogen.

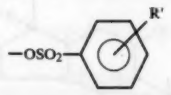
R_8 is alkyl of one through three carbons, hydrogen, or phenyl unsubstituted or substituted with a maximum of three substituents selected from the group consisting of alkyl of one through three carbons, halo, alkoxy of one through three carbons, and trihaloalkyl of one to two carbons;

and A′ is selected from the group consisting of $-(CH_2-)_mOCH_2CH_2B$ and $-(CH_2)_m-(OCH_2CH_2)_qB'$, wherein B is selected from the group consisting of halo, and



wherein R′ is selected from the group consisting of alkyl of from one to three carbon atoms, nitro, halo an trifluoromethyl;

B′ is selected from the group consisting halo, hydroxy and



wherein R′ is the same as above, and m is one to three and q is two to three.

4,207,239

BENZOTHIEPINS

John M. McCall, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 858,303, Dec. 7, 1977, Pat. No. 4,153,612, which is a division of Ser. No. 847,350, Oct. 31, 1977, abandoned. This application Jan. 2, 1979, Ser. No. 311
Int. Cl.[2] C07D 337/08
U.S. Cl. 549—9 1 Claim

1. A compound having the formula

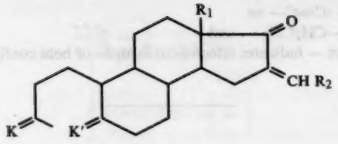
4,207,240

4,5-SECO-ESTRANE-3,5,17-TRIONE DERIVATIVES

Jean Jolly, Fontenay-sous-Bois; Bernard Matra, Aulnay-sous-Bois, and Primo Rizzi, Villemomble, all of France, assignors to Roussel Uclaf, Paris, France

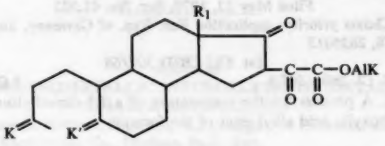
Filed Feb. 26, 1979, Ser. No. 15,470
Claims priority, application France, Mar. 6, 1978, 78 06307
Int. Cl.[2] C07D 317/10
U.S. Cl. 260—340.9 AS 8 Claims

1. A compound of the formula

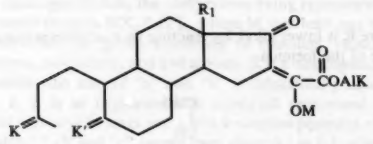


wherein R_1 is alkyl of 1 to 3 carbon atoms, R_2 is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms and K and K' are individually blocked ketones in the form of ketals.

6. A process for the preparation of a compound of claim 1 comprising reacting in the presence of a base a compound of the formula



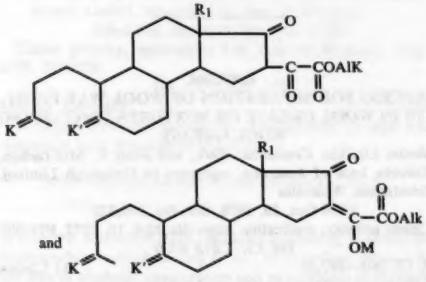
wherein K, K' and R_1 have the above definitions and AlK is alkyl of 1 to 8 carbon atoms or an alkali metal enolate of the formula



wherein K, K', R_1 and AlK have the above definition and M is an alkali metal with an aldehyde of the formula

wherein R_2 has the above definition to obtain a compound of claim 1.

7. A compound having a formula selected from the group consisting of



wherein R_1 is alkyl of 1 to 3 carbon atoms, AlK is alkyl of 1 to 8 carbon atoms, M is an alkali metal and K and K' are individually blocked ketones in the form of ketals.

4,207,241

2-NAPHTHYL ACETIC ACID DERIVATIVES AND COMPOSITIONS AND METHODS THEREOF

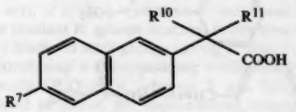
John H. Fried, and Ian T. Harrison, both of Palo Alto, Calif., assignors to Syntex Corporation, Palo Alto, Calif.

Division of Ser. No. 727,082, Sep. 27, 1976, Pat. No. 4,097,674, which is a division of Ser. No. 558,874, Mar. 17, 1975, Pat. No. 4,001,301, which is a division of Ser. No. 195,875, Nov. 4, 1971, Pat. No. 3,896,157, which is a division of Ser. No. 694,771, Dec. 7, 1967, abandoned, which is a continuation-in-part of Ser. No. 608,997, Jan. 13, 1967, abandoned. This application Mar. 27, 1978, Ser. No. 890,421

Int. Cl.[2] **C07D** *309/06;* **C07C** *63/595, 69/76*

U.S. Cl. 260—345.7 R **1 Claim**

1. A compound of the formula



XIV

wherein

R^7 is methoxy, methoxymethyloxy, difluoromethoxy, 4'-methoxytetrahydropyran-4'yloxy, methylthio, methoxymethylthio, or difluoromethylthio;

R^{10} and R^{11} taken together are methylene or difluoromethylene;

and the corresponding alkyl esters and pharmaceutically acceptable acid addition salts thereof.

4,207,242

6-ALKOXY PROSTAGLANDIN I_1 COMPOUNDS

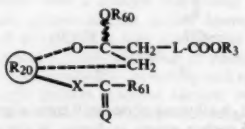
Frank H. Lincoln, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 31, 1978, Ser. No. 892,108

Int. Cl.[2] **C07C** *177/00*

U.S. Cl. 260—347.4 **12 Claims**

1. A compound of the formula



wherein L is

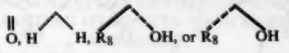
(1) $-(CH_2)_d-C(R_2)_2-$

(2) $-CH_2-O-CH_2-Y-$ or

(3) $-CH_2CH=CH-$

wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$, or $-(CH_2)_2-$;

wherein Q is



wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;

wherein R_3 is

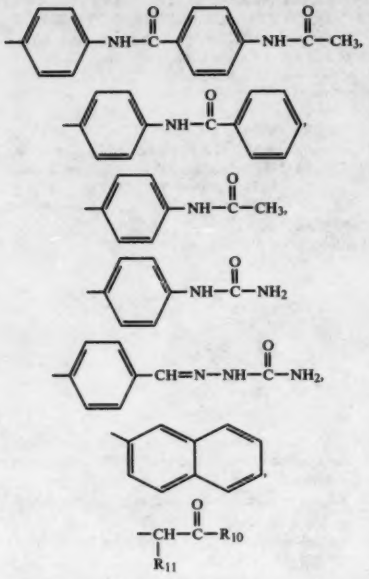
(a) alkyl of one to 12 carbon atoms, inclusive,

(b) cycloalkyl of 3 to 10 carbon atoms, inclusive,

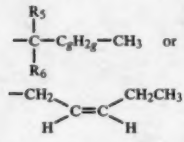
(c) aralkyl of 7 to 12 carbon atoms, inclusive,

(d) phenyl,

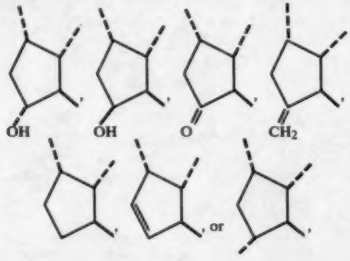
(e) phenyl substituted with one, 2, or 3 chloro or alkyl of one to 4 carbon atoms, inclusive;



wherein R_{10} is phenyl, p-bromophenyl, p-biphenylyl, p-nitrophenyl, p-benzamidophenyl, or 2-naphthyl;
wherein R_{11} is hydrogen or benzoy;
(m) hydrogen; or
(n) a pharmacologically acceptable cation; wherein R_{61} is



wherein C_8H_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between $-CR_5R_6-$ and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro,
wherein R_{20} is



wherein R_{60} is straight-chain alkyl of one to 6 carbon atoms, inclusive;
wherein X is
(f) (1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C— or
(4) $—CH_2CH_2—$, and
wherein ~ indicates attachment in alpha or beta configuration.
(g)

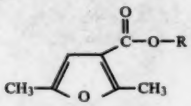
(h) **4,207,243**

PREPARATION OF 2,5-DIMETHYLFURAN-3-CARBOXYLIC ACID ALKYL ESTERS

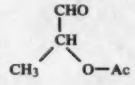
(i) **Friedrich Linhart, Heidelberg; Bjoern Girgensohn, Mannheim; Hans Merkle, Ludwigshafen; Hardo Siegel, Speyer, and Hans-Richard Mueller, Bobenheim-Roxheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany**

(j) **Filed May 22, 1979, Ser. No. 41,522**
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1978, 2826013
Int. Cl.[2] C07D *307/68*
(k) **U.S. Cl. 260—347.5** **3 Claims**

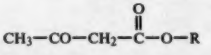
1. A process for the preparation of a 2,5-dimethylfuran-3-carboxylic acid alkyl ester of the formula

(l) 

where R is lower alkyl, by reacting an α-acyloxypropionaldehyde of the formula



where Ac is acyl, with an acetoacetic acid ester of the formula



where R has the above meanings, at from +20° to +130° C., wherein the reaction is carried out in the presence of solid anhydrous iron-III chloride.

4,207,244

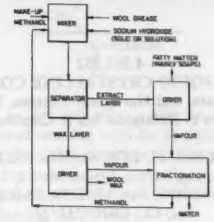
PROCESS FOR SEPARATION OF WOOL WAX FROM FATS IN WOOL GREASE OR MIXTURES CONTAINING WOOL GREASE

Malcolm Chaikin, Centennial Park, and John R. McCracken, Kareela, both of Australia, assignors to Unisearch Limited, Kensington, Australia

Filed Oct. 10, 1978, Ser. No. 949,528
Claims priority, application Australia, Oct. 10, 1977, PD1987
Int. Cl.[2] C07J *9/00*
U.S. Cl. 260—397.25 **11 Claims**

1. A process for separation of wool wax from wool grease comprising heating the wool grease to above melting point, blending the molten wool grease with hot methanol, adding an alkali in an amount of about 120 percent of the calculated

requirement for neutralization of the wool grease based on its acid value, separating the insoluble and immiscible wool wax



layer from the methanol extract layer, and recovering the wool wax by drying of said wool wax layer.

4,207,245

ORGANOMETALLIC INTERCALATES OF METAL CHALCOGENOHALIDES

Thomas R. Halbert, Fanwood, N.J., assignor to Exxon Research & Engineering Co., Florham Park, Del.

Filed Jan. 2, 1979, Ser. No. 67
Int. Cl.² C07F 7/28
U.S. Cl. 260—429.5 **13 Claims**

1. A composition of matter comprising an organometallic sandwich compound intercalated in the layered structure of a metal chalcogenohalide, the composition being represented by the general formula $MX_aY_b[Z]_c$ where M is at least one metal selected from the group consisting of titanium, vanadium, chromium, manganese, iron and indium, X is a chalcogenide, Y is a halide, the sum of "a" and "b" is substantially equal to about 2, Z is an organometallic sandwich compound with parallel carbocyclic rings and a first ionization potential of less than about 7 eV and "c" ranges from about 0.1 to 0.2, where in the layered metal chalcogenohalide belongs to orthohombic space group Pnmn.

4,207,246

ORGANOSILOXANES WITH SIC-BONDED GROUPS AND A PROCESS FOR PREPARING THE SAME

Walter Hafner, Furth; Erich Markl, Munich; Ludwig Eibel, Munich; Gerhard Kreis, Munich; Dietrich Samrowski, Munich; Manfred Wick, Schliersee; Bernward Deubzer, Burghausen, and Wilhelm Friedrich, Munich, all of Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,551
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2809874
Int. Cl.² C07F 7/08
U.S. Cl. 556—439 **7 Claims**

1. Organosiloxanes having SiC-bonded ester groups which contain at least one unit of the formula

$$ROOCCH_2CH(COOR)CH_2CHR'CH_2Si(CH_3)_aO_{3-a/2}$$

in which R is selected from the group consisting of monovalent hydrocarbon radicals having from 1 to 12 carbon atoms which are free of aliphatic unsaturation and monovalent hydrocarbon radicals having one ether oxygen atom, R' is selected from the group consisting of hydrogen and CH_3 radical and a is 0, 1 or 2.

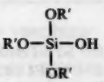
4,207,247

PREPARATION OF TRIALKOXYSILANOLS

Karl O. Knollmueller, Hamden, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Jun. 1, 1979, Ser. No. 44,829
Int. Cl.² C07F 7/04
U.S. Cl. 556—463 **10 Claims**

1. In a process for the preparation of sterically hindered trialkoxysilanol compounds of the formula:



wherein R' is independently selected from hydrogen, alkyl, alkenyl, aryl, or aralkyl, with the proviso that at least a majority of the pendant R' groups attached to the central Si atom are sterically hindered alkyl groups having at least 3 carbon atoms, by hydrolyzing a corresponding trialkoxyhalosilane of the formula, $(R'O)_3Si\text{-}X$, wherein X is a halogen and R' is defined as above, the improvement comprising reacting the trialkoxyhalosilane in the presence of a catalytic amount of a phase transfer agent, and,

conducting the hydrolysis in a two-phase system comprising an organic phase consisting of a non-protonic solvent and an aqueous phase containing an inorganic base.

4,207,248

CONVERSION OF SYNTHESIS GAS WITH COBALT-CONTAINING FLUID CATALYST

Stephen A. Butter, Cherry Hill, N.J.; Francis V. Hanson, Salt Lake City, Utah, and Howard S. Sherry, Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,299
Int. Cl.² C07C 1/04, 1/16
U.S. Cl. 260—449.6 R **5 Claims**

1. In the process of converting synthesis gas to a naphtha having a boiling range of less than 400° F. at a 90% overhead while producing no more than 30 weight percent of methane plus ethane by contacting said synthesis gas at elevated temperature and pressure with a catalyst comprising cobalt and a crystalline acidic aluminosilicate zeolite having a silica-to-alumina ratio of at least 12, a pore size greater than about 5 Angstrom units and a constraint index of about 1 to 12, the improvement which comprises converting said syngas with an unpromoted single particle fluidized catalyst containing said cobalt, said acidic zeolite and a siliceous matrix containing no more than 10 percent by weight of alumina based on the total silica content of the matrix at a temperature from about 400° to 550° F., a pressure of about 50 to 1,000 psig and at a gas hourly space velocity of about 400 to 20,000 and obtaining said naphtha in an amount which is at least 50 weight percent of the total hydrocarbons produced, said single particle fluid catalyst prepared by adding said acidic zeolite to a siliceous hydrogel, homogenizing, spray drying to obtain fluid particles and thereafter impregnating with a water soluble cobalt salt.

4,207,249

CATALYTIC PROCESS FOR SYNTHESIZING METHANE BY REACTING HYDROGEN WITH CARBON MONOXIDE

Yves Chauvin, Le Peca; Dominique Commereuc, Meudon, and Igor Tkatchenko, Caluire, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Nov. 13, 1978, Ser. No. 960,395
Int. Cl.² C07C 1/04, 1/06
U.S. Cl. 260—449.6 M **9 Claims**

1. A process for manufacturing methane by reacting hydrogen with carbon monoxide in an inert, liquid saturated hydrocarbon medium, in the presence of a catalyst, wherein the catalyst is prepared by reacting at least one nickel compound

with at least one reducing aluminum compound in an inert liquid medium; wherein the aluminum compound has the formula AlR_3, at least one of the radicals R being a monovalent hydrocarbon radical, and the other radicals R being selected from hydrogen, monovalent hydrocarbon radicals and alkoxy groups; wherein the atomic ratio of aluminum of the aluminum compound to nickel of the nickel compound is from 1:1 to 20:1; and wherein the reaction of hydrogen with carbon monoxide is effected at a temperature of 100°–450° C. and a pressure of 1–50 bars.

4,207,250

CONVERSION OF SYNTHESIS GAS WITH IRON-CONTAINING FLUID CATALYST

Stephen A. Butter, and Howard S. Sherry, both of Cherry Hill, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,301

Int. Cl.[2] C07C *1/04, 1/11*

U.S. Cl. 260—449.6 R **5 Claims**

1. In the process of converting synthesis gas to a naphtha having a boiling range of less than 400° F. at a 90% overhead while producing no more than 30 weight percent of methane plus ethane by contacting said synthesis gas at elevated temperature and pressure with a catalyst comprising iron and a crystalline acidic aluminosilicate zeolite having a silica-to-alumina ratio of at least 12, a pore size greater than about 5 Angstrom units and a constraint index of about 1 to 12, the improvement which comprises converting said syngas with an unpromoted single particle fluidized catalyst containing said iron, said acidic zeolite and a siliceous matrix containing no more than 30% by weight of alumina based on the total silica content, at a temperature of from about 500 to 600° F., a pressure of about 50 to 1,000 psig and at a gas hourly space velocity of about 400 to 20,000 and obtaining said naphtha in an amount which is at least 40 weight percent of the total hydrocarbons produced, said single particle fluid catalyst prepared by adding said acidic zeolite to a siliceous hydrogel, homogenizing, spray drying to obtain fluid particles and thereafter impregnating with a water soluble iron salt.

4,207,251

CATALYTIC OXIDATION OF FORMAMIDES TO FORM ISOCYANATES

Nico Heyboer, Wolfheze, Netherlands, assignor to Akzona Incorporated, Ashville, N.C.

Filed Jul. 10, 1978, Ser. No. 923,278

Claims priority, application Netherlands, Aug. 2, 1977, 7708510

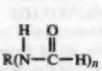
Int. Cl.[2] C07C *118/04*

U.S. Cl. 260—453 P **24 Claims**

1. A process for preparing an isocyanate corresponding to the formula

$$R(NCO)_n$$

where R is an unsubstituted alkyl group, cycloalkyl group, aryl group, aralkyl group or alkaryl group containing not more than 24 carbon atoms, or one of said groups substituted with chlorine, fluorine, cyanogen, alkyl carbonyl or alkoxy carbonyl containing not more than 10 carbon atoms in the alkyl or alkoxy group and n is 1 or 2 which (a) comprises oxidizing an N-monosubstituted formamide corresponding to the formula



where R and n are defined as above, in the gas phase reaction with an oxygen containing gas in a reaction zone at a temperature between about 300° C. to about 600° C. in the presence of a catalytic amount of copper and/or one or more metals of groups IB and VIII of the 5th and 6th period of the Periodic System of Elements, for a contact of about 0.01 to about 6 seconds to form said isocyanate and (b) subjecting the resultant gaseous isocyanate containing reaction mixture to a separation process to separate the product isocyanate from water of reaction.

4,207,252

NEMATIC LIQUID CRYSTALLINE COMPOUNDS

Hisato Sato, Tabata, and Haruyoshi Takatsu, Kodaira, both of Japan, assignors to Dainippon Ink & Chemicals, Inc., Tokyo, Japan

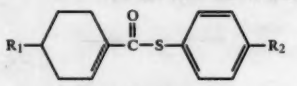
Filed Oct. 27, 1978, Ser. No. 955,351

Claims priority, application Japan, Nov. 2, 1977, 52-131992; Dec. 27, 1977, 52-156450; Jan. 19, 1978, 53-003757

Int. Cl.[2] C07C *153/11*

U.S. Cl. 260—455 R **33 Claims**

1. A compound of the formula



wherein R_1 represents a linear alkyl group containing 3 to 8 carbon atoms and R_2 represents a linear alkyl group containing 3 to 7 carbon atoms, or a cyano group, with the proviso that when R_2 represents a linear alkyl group containing 3 carbon atoms, R_1 does not represent a linear alkyl group containing 3 to 7 carbon atoms, and when R_2 represents a cyano group, R_1 does not represent a linear alkyl group containing 3 carbon atoms.

4,207,253

METHOD OF MAKING COPOLYMERIZABLE, ULTRAVIOLET LIGHT ABSORBER (2-CYANO-3,3-DIPHENYLACRYLOXY) ALKYLENE ACRYLIC ACID ESTERS

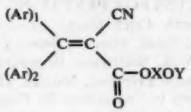
Donald H. Lorenz, Basking Ridge, and Bruce A. Gruber, Bloomingdale, both of N.J., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 006,787, Jan. 26, 1979. This application Mar. 1, 1979, Ser. No. 16,134

Int. Cl.[2] C07C *121/70*

U.S. Cl. 260—465 D **12 Claims**

1. A method of making copolymerizable ultraviolet light absorber (2-cyano-3,3-diphenylacryloxy) alkylene acrylic acid esters in high yield having the formula:



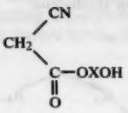
where

$(Ar)_1$ and $(Ar)_2$ are aromatic carbocyclic nuclei of the benzene and naphthalene series and are independently selected from phenyl or phenyl substituted with alkyl, halo, alkoxy, carboxy, carbalkoxy, cyano, acetyl, benzoyl, phenyl, alkyl phenyl, phenoxy phenyl, alkyl substituted phenoxy, or alkoxy phenyl substituted phenyl, and naphthyl;

X is alkylene, C_2–C_{17}, unsubstituted or substituted with halo, cyano, alkyl, alkoxy, alkoxyalkyl, or alkoxyalkyleneoxy, C_1–C_6; and,

Y is copolymerizable radical selected from acryloyl, alkylacryoyl, acryloxyalkyl, acryloxyhydroxyalkyl and alkylacryloxyhydroxyalkyl, C_3–C_{12}, which comprises the steps of:

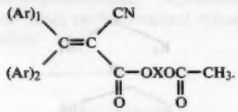
(a) acylating a hydroxyalkylene cyanoacetate having the formula:



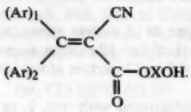
where X is as defined above, with an acetyl acylating agent capable of reacting with the hydroxy group to form an acetyl acylated intermediate which is convertible to hydroxy by hydrolysis,

(b) condensing the acetyl acylated intermediate with a benzophenone having the formula:

where $(Ar)_1$ and $(Ar)_2$ are as defined above, to form a condensed intermediate which is



(c) hydrolyzing the condensed intermediate to form the corresponding condensed hydroxy compound which is



and;

(d) esterifying the condensed hydroxy compound with an acryloyl halide or acrylic acid having the formula:

YZ

where Y is as defined above and Z is a halide or hydroxyl group, to form said desired compounds.

4,207,254

METHOD FOR PREPARING IMPROVED TOLUENE SULFONIC ACID DERIVATIVES AND THE PRODUCTS THEREOF

Harry L. Jenkins, Huntington, W. Va.; Gene C. Smelser, Proctorville, Ohio, and David W. Alford, Milton, W. Va., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Mar. 26, 1976, Ser. No. 670,939

Int. Cl.² C07C *143/56*

U.S. Cl. 260—508 **11 Claims**

1. A process for preparing a toluene sulfonic acid selected from the group consisting of 2-chloro-5-amino-para-toluene sulfonic acid, 4-amino-meta-toluene sulfonic acid, and 6-chloro-4-amino-meta-toluene sulfonic acid, comprising forming an aqueous solution of an alkali metal salt of said acid, providing a source of a mineral acid, and mixing incremental portions of said salt solution and said acid in proportions sufficient to maintain the mixture at an essentially constant pH of from about 0.5 to about 1.2.

4,207,255

MANUFACTURE OF VERY PURE HALONAPHTHALIC ACID ANHYDRIDES

Wolfgang Eisfeld; Walter Disteldorf, and Albert Hettche, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 10, 1977, Ser. No. 850,239

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1976, 2653346

Int. Cl.² C07C *63/34*

U.S. Cl. 260—546 **5 Claims**

1. In a process for the manufacture of pure halonaphthalic acid anhydrides from haloacenaphthenes by oxidizing the haloacenaphthenes with nitric acid in the presence of vanadate, with out without further metal salts, at an elevated temperature, the improvement which comprises: carrying out the oxidation in a mixture of aliphatic carboxylic acid, water and nitric acid; isolating the reaction product and subjecting the reaction product to an oxidative after-treatment with hypochlorite in aqueous solution at a pH of from 9 to 12 at an elevated temperature.

4,207,256

TREATMENT OF WATER VAPOR GENERATED IN CONCENTRATING AN AQUEOUS UREA SOLUTION

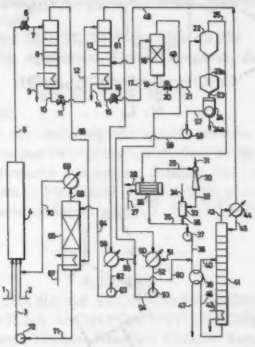
Shigeru Inoue, Kanagawa; Tadao Shirasu, Chiba, and Hisashi Miyagawa, Takaishi, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

Filed Jan. 22, 1976, Ser. No. 651,569

Claims priority, application Japan, May 6, 1975, 50-53141

Int. Cl.² C07C *126/02*

U.S. Cl. 260—555 A **9 Claims**



1. In a process for treating water vapor generated in concentrating an aqueous urea solution wherein a urea synthesis effluent containing urea, unreacted ammonium carbamate and water from a urea synthesis zone is subjected to at least one high pressure unreacted ammonium carbamate decomposition stage and a low pressure unreacted ammonium carbamate decomposition stage provided with a low pressure rectifying zone, the pressure of said urea synthesis effluent is stepwise reduced in each stage to decompose substantially all of said unreacted ammonium carbamate into ammonia and carbon dioxide and to separate the formed mixture of ammonia, carbon dioxide and water vapor from the aqueous urea solution, the aqueous urea solution which still contains small amounts of ammonia and carbon dioxide is concentrated to obtain crystalline urea or molten urea substantially free of water, and water vapor which is generated in the concentration of said aqueous urea solution and which contains small amounts of ammonia and carbon dioxide is cooled for condensation to form a dilute aqueous ammonium carbamate solution, the improvement which comprises the steps of: (a) subjecting said dilute aqueous ammonium carbamate solution in an aqueous ammonium car-

bamate solution rectifying zone to rectification under a gauge pressure lower than 25 kg/cm^2 to distill off a gaseous mixture of water vapor, ammonia and carbon dioxide; (b) introducing said gaseous mixture into said low pressure rectifying zone of said low pressure unreacted ammonium carbamate decomposition stage operated under substantially the same pressure as the pressure in said aqueous ammonium carbamate solution rectifying zone in step (a) and at a head temperature of from 100° to 140° C. and a still temperature of from 120° C. to 160° C., thereby bringing said gaseous mixture into contact with said urea synthesis effluent in said low pressure rectifying zone, condensing and absorbing the water vapor contained in said gaseous mixture in said urea synthesis effluent to remove the water vapor from said gaseous mixture; and (c) recovering for recycling ultimately to the urea synthesis zone, the resultant gaseous mixture of ammonia and carbon dioxide together with a gaseous mixture of ammonia and carbon dioxide which is generated in said low pressure unreacted ammonium carbamate decomposition stage.

4,207,257

INTER-PHENYLENE-13,14-DIHYDRO-PG AMIDES

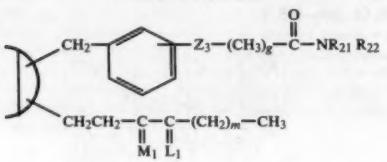
Walter Morozowich, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 788,455, Apr. 18, 1977, Pat. No. 4,100,192. This application Apr. 20, 1978, Ser. No. 898,251

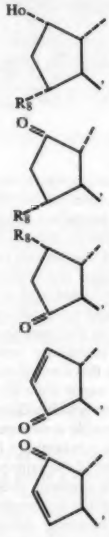
Int. Cl.^{2} **C07C** *103/22, 103/76*

U.S. Cl. 260—558 R **43 Claims**

1. A prostaglandin analog of the formula



wherein D is

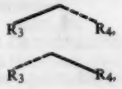


wherein R_8 is hydrogen or hydroxy;

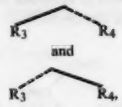
wherein g is one, 2, or 3;

wherein Z_3 is oxa or methylene;

wherein L_1 is

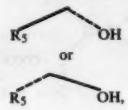


or a mixture of



wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is methyl only when the other is hydrogen or methyl;

wherein M_1 is



wherein R_5 is hydrogen or methyl;

wherein m is one to 5, inclusive; and

wherein R_{21} and R_{22} are

(i) hydrogen;

(ii) alkyl of one to 12 carbon atoms, inclusive;

(iii) cycloalkyl of 3 to 10 carbon atoms, inclusive;

(iv) aralkyl of 7 to 12 carbon atoms, inclusive;

(v) phenyl;

(vi) phenyl substituted with one, 2, or 3 chloro, alkyl of one to 3 carbon atoms, inclusive, hydroxy or nitro;

(vii) hydroxylalkyl of one to 4 carbon atoms, inclusive;

(viii) dihydroxyalkyl of one to 4 carbon atoms; or

(ix) trihydroxyalkyl of one to 4 carbon atoms;

with the further proviso that not more than one of R_{21} and R_{22} is other than hydrogen or alkyl.

4,207,258

PROCESS FOR THE PREPARATIN OF α-6-DEOXYTETRACYCLINES

Renato Broggi, Milan, and Gino Cotti, Monza, both of Italy, assignors to Ankerfarm S.p.A., Milan, Italy

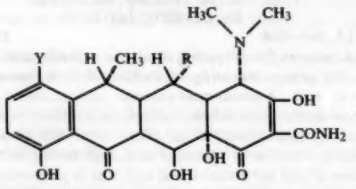
Continuation of Ser. No. 333,382, Feb. 16, 1973, abandoned. This application Feb. 28, 1977, Ser. No. 772,923

Claims priority, application Italy, Feb. 24, 1972, 20959 A/72

Int. Cl.^{2} **C07C** *103/19*

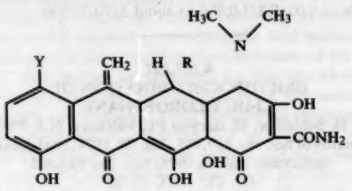
U.S. Cl. 260—559 AT **13 Claims**

1. A process for the preparation of alpha-6-deoxytetracyclines of the formula:



wherein

Y is H, F, Cl, Br or I; and
R is H, OH or —O—CO—(C_{1-6} alkyl);
which comprises contacting a 6-demethyl-6-deoxy-6-methylene tetracycline or salt thereof having the formula



in which Y and R are as indicated above, with hydrogen at a temperature of between 15° C. and 80° C. in the presence of a catalyst soluble in a polar solvent, said catalyst being a complex of rhodium with electron donor ligands of a tertiary phosphine selected from the group consisting of triphenylphosphine, tributylphosphine, triethylphosphine, diethylphenylphosphine and diphenylethylphosphine and said polar solvent being a mono- or polyhydric alcohol with from 1 to 4 carbon atoms, N,N-dimethylformamide, N,N-dimethylacetamide, dioxan, tetrahydrofuran, methoxyethanol, ethoxyethanol, acetonitrile or pyridine.

4,207,259

PROCESS FOR THE MANUFACTURE OF α-CHLORACETOACETAMIDES

Gerhard Künstle, Raitenhaslach, and Herbert Jung, Burghausen, both of Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed May 25, 1979, Ser. No. 42,700

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1978, 2824046

Int. Cl.² C07C *103/30*

U.S. Cl. 260—561 K **6 Claims**

1. A process for the manufacture of α-chloracetoacetamides of the general formula

$$CH_3COCH(Cl)CONR_1R_2$$

in which
R_1 represents alkyl radicals having 1 to 3 carbon atoms, and
R_2 represents hydrogen or alkyl radicals having 1 to 3 carbon atoms,
by reacting acetoacetamides of the general formula

$$CH_3COCH_2CONR_1R_2$$

in which R_1 and R_2 have the meanings given above, with chlorine in stoichiometric amounts, in the presence of aqueous solvents, at temperatures below 0° C., characterized in that water is exclusively used as the solvent, and the reaction is carried out in the liquid phase.

4,207,260

PREPARATION OF TERTIARY AMINES

Tamotsu Imai, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Dec. 20, 1978, Ser. No. 971,283

Int. Cl.² C07C *85/08*

U.S. Cl. 260—577 **12 Claims**

1. A process for the preparation of a tertiary amine which comprises reacting an aldehyde, hydrogen and a nitrogen-containing compound having the formula:

in which the R's are independently selected from the group consisting of hydrogen, alkyl, aryl, cycloalkyl, aralkyl, and alkaryl radicals in the presence of a catalyst selected from the group consisting of carbonyls and halocarbonyls of rhodium and ruthenium.

4,207,261

PROCESS FOR PREPARING O-PHENYLENEDIAMINE

Rezsö Csikos, , assignors to Magyar Ásványolaj és Földgáz Kisérleti Intézet, Veszprém, Hungary

Filed Aug. 11, 1978, Ser. No. 932,930

Claims priority, application Hungary, Aug. 12, 1977, MA 2902

Int. Cl.² C07C *85/11, 85/04*

U.S. Cl. 260—580 **6 Claims**

1. A process for preparing o-phenylenediamine, which comprises nitrating 1,4-dichlorobenzene to give 2,5-dichloronitrobenzene, aminating the latter compound with a 10–36 molar excess of a 60–90% aqueous ammonium hydroxide solution at a temperture of 160° to 220° C., subjecting the 4-chloro-2-nitraniline obtained to catalytic hydrogenation and finally separating the o-phenylenediamine in a manner known per se.

4,207,262

CHEMICAL PROCESS FOR REDUCING THE CYCLOHEXANONE CONTENT OF CRUDE ANILINE

Alan J. Graham, and Arthur Ibbotson, both of Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

Filed May 21, 1979, Ser. No. 41,256

Claims priority, application United Kingdom, Jun. 8, 1978, 26546/78

Int. Cl.² C07C *85/26*

U.S. Cl. 260—582 **2 Claims**

1. A process for reducing the cyclohexanone content of crude aniline that has been prepared by the catalytic hydrogenation of nitrobenzene comprising treating the crude aniline with from 10 ppm to 5%, based on the weight of crude aniline, of phosphoric acid or lower alkyl or chloro lower alkyl ester thereof.

4,207,263

MANUFACTURE OF SECONDARY AMINES BY ALKYLATING AMMONIA WITH ALCOHOLS

Herwig Hoffmann; Herbert Mueller; Herbert Toussaint, all of Frankenthal, and Arnold Wittwer, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 837,937, Sep. 29, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,155

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1976, 2645712

Int. Cl.² C07C *85/06*

U.S. Cl. 260—583 R **12 Claims**

1. A process for the manufacture of a secondary amine which comprises reacting essentially stoichiometric amounts of ammonia with a primary or secondary monohydric or polyhydric alcohol over a hydrogenating/dehydrogenating catalyst in the presence or absence of hydrogen and in the presence of an inorganic base at a temperature of from 100° to 150° C., wherein at least the first half of the ammonia is fed to the liquid reaction mixture containing the alcohol at the rate at which it reacts, and wherein water is removed at the rate at which it is formed, whereby the added ammonia encounters an excess of alcohol in the reaction mixture until the reaction is substantially complete.

4,207,264

REARRANGEMENT OF ARALKYL HYDROPEROXIDES TO FORM PHENOLS AND CARBONYL COMPOUNDS

John E. Anderson, and Ernest G. Hildenbrand, both of Houston, Tex., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 872,009, Oct. 29, 1969, abandoned. This application Mar. 27, 1973, Ser. No. 345,342
Int. Cl.[2] C07C 45/00
U.S. Cl. 568—385 8 Claims

1. A continuous process for catalytically cleaving an aralkyl hydroperoxide of the general formula

$$Ar-(C(R)(R')-OOH)_n$$

where Ar is an unsubstituted benzene nucleus, alkyl benzene nucleus or polynuclear aromatic, R and R′ are alkyl, cycloalkyl or hydrogen, and

n is a whole number from one to three inclusive, to form the corresponding phenolic and carbonyl compounds, comprising the steps of:

(a) forming a reaction mixture by continuously combining said hydroperoxide in the presence of a substantially non-reactive material selected from the group consisting of an organic solvent and liquid carrier with an acid cleavage catalyst in an amount of at least about 0.10% of said reaction mixture, said catalyst being selected from the class consisting of mineral acids and Lewis acids,

(b) flowing said reaction mixture through a reaction zone characterized by the lack of substantial backmixing at a temperature of about 50° C.–120° C. for a residence time sufficient to complete cleavage of said hydroperoxide to its corresponding phenolic compound, the hold back in said reaction zone being limited to a value less than $\frac{1}{e}$, where e is the natural function 2.718 to control the formation of highly colored side products, and

(c) continuously recovering from said reaction zone a reaction effluent containing said cleavage products and substantially devoid of highly colored side products.

4,207,265

PROCESS FOR PREPARING HYDROQUINONE AND ACETONE

Peter S. Carleton, Branford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 388,443, Aug. 15, 1973, abandoned, which is a continuation of Ser. No. 134,871, Apr. 16, 1971, abandoned. This application Mar. 31, 1975, Ser. No. 563,464
Int. Cl.[2] C07C 37/08, 45/00
U.S. Cl. 568—385 7 Claims

1. A process which comprises reacting p-isopropenylphenol with an at least equimolar amount of hydrogen peroxide in the presence of glacial acetic acid and a catalytic amount of a strong acid selected from the group consisting of sulfuric, phosphoric, p-toluenesulfonic, benzenesulfonic, methanesulfonic and ethanesulfonic acids, said reaction being carried out at a temperature not greater than 80° C. whereby there is obtained hydroquinone and acetone.

4,207,266

PROCESS FOR THE PREPARATION OF TRIFLUOROMETHYLATED AROMATIC COMPOUNDS

Thomas R. Opie, Collingswood, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 9, 1979, Ser. No. 19,060
Int. Cl.[2] C07C 85/14
U.S. Cl. 260—651 F 14 Claims

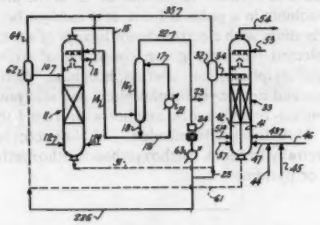
1. A process for the preparation of mono-trifluoromethylated aromatic compounds which comprises reacting an aromatic comound with carbon tetrahalide in the presence of a strong Bronsted or Lewis acid in anhydrous hydrogen fluoride at temperatures from about −20° C. to about 300° C. under pressures from about 10 millimeters to about 3,000 psig wherein the catalyst to carbon tetrahalide to aromatic compound to hydrogen fluoride molar ratios are in the range of from about 0.01/0.2/1.0/0.6 to about 5/10/1/100.

4,207,267

DEHYDROCHLORINATION OF 1,2-DICHLOROETHANE

Harvey D. Schindler, 45 Berwyn Pl., Fairlawn, N.J. 07410

Continuation of Ser. No. 437,985, Jan. 30, 1974, abandoned. This application Apr. 2, 1975, Ser. No. 564,456
Int. Cl.[2] C07C 21/02
U.S. Cl. 260—656 R 17 Claims



1. In a process for dehydrochlorinating 1,2-dichloroethane to vinyl chloride by direct contact with a molten salt containing the higher and lower valent chlorides of a multivalent metal, wherein during said dehydrochlorination, there is present at least one of an oxychloride of the multivalent metal in molten form and trichloroethylene, the improvement comprising:

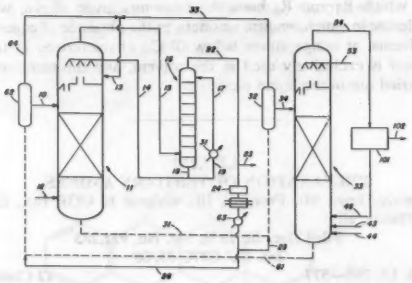
effecting said contacting in the presence of ethane to provide an ethane to 1,2-dichloroethane weight ratio from about 0.01:1 to about 0.15:1 to increase selectivity to vinyl chloride.

4,207,268

OXYCHLORINATION OF METHANE

Morgan C. Sze, Upper Montclair; Herbert Riegel, Maplewood, and Harvey D. Schindler, Paterson, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 631,157, Nov. 11, 1975, Pat. No. 4,107,222, which is a continuation of Ser. No. 229,848, Oct. 24, 1972, abandoned. This application Mar. 30, 1978, Ser. No. 891,411
Int. Cl.[2] C07C 17/00
U.S. Cl. 260—659 R 8 Claims



1. A process for producing as net chlorinated methane reaction product a mixture of methylene chloride and chloroform,

without essential net production of carbon tetrachloride, comprising:

(b) contacting in an oxidation reaction zone a molten salt mixture of cuprous and cupric chloride with molecular oxygen to produce copper oxychloride;

(b) contacting molten salt mixture from step (a) iin an oxychlorination reaction zone with fresh feed methane and hydrogen chloride to effect oxychlorination of the methane with oxygen requirements for the oxychlorination being provided by the oxychloride of the molten salt mixture, said contacting being effected at a temperature of from about 700° F. to about 860° F. at a methane conversion from about 15 to 25 mole percent and in the presence, of carbon tetrachloride in an amount to provide a carbon tetrachloride to methane mole ratio sufficient to essentially eliminate net production of carbon tetrachloride;

(c) withdrawing from the oxychlorination reaction zone an effluent containing unreacted methane, methyl chloride, methylene chloride, chloroform and carbon tetrachloride;

(d) recovering as net product, from the effluent, chloroform and at least a portion of the methylene chloride;

(e) recycling to the oxychlorination reaction zone unreacted methane, methyl chloride and any remaining methylene chloride recovered from the effluent; and

(f) passing the molten salt mixture from the oxychlorination reaction zone to the oxidation reaction zone.

4,207,269

FLAME RESISTANT RESIN COMPOSITIONS

Harry H. Beacham, Langhorne, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 859,838, Dec. 12, 1977. This application Mar. 1, 1979, Ser. No. 16,581

Int. Cl.² C08K 5/52

U.S. Cl. 525—2 **8 Claims**

1. A flame resistant styrene-unsaturated polyester resin composition comprising said styrene-unsaturated polyester resin in combination with at least about 20 parts per hundred and no more than about 40 parts per hundred of diallyl maleate and at least about 5 parts per hundred but no more than about 20 parts per hundred of triethyl phosphate; the total quantity of diallyl maleate and triethyl phosphate present in said styrene-unsaturated polyester resin being from 35 to 40 parts per hundred when from about 20 to about 30 parts per hundred of diallyl maleate are present in said composition and 50 parts per hundred when 40 parts per hundred of diallyl maleate are present in said composition; the weight ratio of diallyl maleate to triethyl phosphate being such that the oxygen index of said composition is 26 or higher.

4,207,270

PHOSPHITES OF POLYALCOHOLS

Norbert Mayer, Gablingen; Gerhard Pfahler, Augsburg, and Hartmut Wiezer, Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

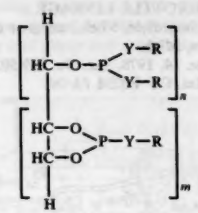
Filed May 22, 1978, Ser. No. 908,289

Claims priority, application Fed. Rep. of Germany, May 25, 1977, 2723526

Int. Cl.² C07F 9/141, 9/15

U.S. Cl. 260—927 R **1 Claim**

1. Compounds of the general formula I



(I)

in which

n is 1, 2, 3, 4, 5, or 6 and

m is 0, 1 or 2, in which case n+2m=3, but is not greater than 6,

Y is —O—, —S— or —NR'— with R' being hydrogen, or C_{1-20} alkyl,

R is linear alkyl having of from 12 to 30 carbon atoms and, if Y is —O—, R may be a linear β-hydroalkyl radical having of from 12 to 30 carbon atoms, or a 3-thia-5-hydroxyalkyl radical having from 12 to about 32 carbon atoms.

4,207,271

BIS(2,2,2-TRIHYDROXYMETHYL ETHANE) METHYLPHOSPHONATE

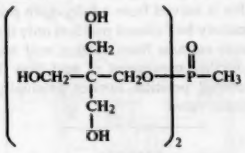
Milton L. Honig, Bronx, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 615,321, Sep. 25, 1975, Pat. No. 4,152,373. This application Dec. 26, 1978, Ser. No. 973,282

Int. Cl.² C07F 9/40

U.S. Cl. 260—953 **1 Claim**

1. A compound having the structure:



4,207,272

TETRACHLORO-BUTYL SECONDARY PHOSPHITES

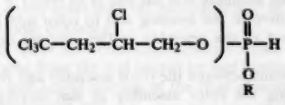
Richard J. Turley, Orange, Conn., assignor to Olin Corporation, New Haven, Conn.

Filed Aug. 25, 1978, Ser. No. 937,033

Int. Cl.² C07F 9/141

U.S. Cl. 260—967 **2 Claims**

1. A tetrachloro-butyl secondary phosphite having the formula:

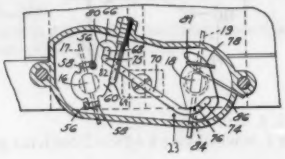


wherein R is selected from alkyl of 1 to about 20 carbon atoms, 2-haloalkyl of about 2 to about 8 carbon atoms, alkaryl, aryl, halogenated aryl, and arylalkyl.

4,207,273
THROTTLE LINKAGE

Gustav J. Siegmund, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1978, Ser. No. 969,502
Int. Cl.[2] F02M 13/04
U.S. Cl. 261—23 A 8 Claims



1. A throttle assembly in a multi-state carburetor comprising:

primary and secondary induction passages in said carburetor;

a first throttle valve pivotably mounted in the primary induction passage for movement between an open and closed position;

a second throttle valve pivotably mounted in the secondary induction passage for movement between an open and closed position;

means for opening and closing said first throttle valve;

means mechanically linking said first throttle valve to said second throttle valve for opening said second throttle valve when said first throttle valve is moved to a fully open position beyond a partially open position;

principal closing means connected to said second throttle valve for closing said second throttle valve when said first throttle valve partially closes from said fully open position;

said linking means connected to said first and second throttle valve being constructed to gradually close said second throttle valve to a partially closed position when said first throttle valve is moved from a fully open position toward an approximately half-closed position only if said principal closing means refrains from closing said second throttle valve and further movement of said first throttle valve toward a closed position further gradually closes said second throttle valve.

4,207,274
CARBURETOR

Oliver V. Phillips, Wheat Ridge, Colo., assignor to Karl M. Johnson, Jackson, Wyo.

Continuation-in-part of Ser. No. 754,031, Dec. 23, 1976, abandoned. This application Aug. 23, 1978, Ser. No. 935,946
Int. Cl.[2] F02M 9/08
U.S. Cl. 261—50 A 27 Claims

1. A carburetor for an internal combustion engine comprising,

a housing having a fuel-air mixing chamber in its lower portion and having a fuel inlet in its upper portion,

an air inlet in the upper end of the mixing chamber,

a rotor assembly movable vertically within said housing and coacting with the air inlet to substantially close the same when said assembly is at the end of its travel in one direction relative to the housing and to open said inlet upon movement of the assembly in the opposite direction of travel,

resilient means between the rotor assembly and the housing for urging the rotor assembly in that direction which substantially closes the air inlet,

a metering valve within the housing comprising a metering element mounted in a stationary position in the housing and a metering orifice carried by the rotor assembly,

means for conducting fuel from the fuel inlet to said metering valve,

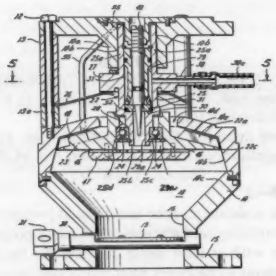
the metering orifice of the rotor assembly coacting with the stationary metering element to control passage of fuel past the valve in accordance with the relative axial position of the rotor assembly with respect to the housing, such axial position of the rotor assembly also controlling the volume of air admitted to the mixing chamber,

means for conducting the fuel which passes the metering valve through the rotor assembly and into the mixing chamber to mix with the admitted air and form the fuel-air mixture which is thereafter conducted to the engine being operated,

means for positively guiding the rotor assembly in its axial movement within said housing to maintain accurate axial alignment of the metering orifice about the metering element througout the entire travel of the rotor assembly with respect to said metering element, and

said means for positively guiding said rotor assembly including an elongate non-deformable guide surface forming part of the rotor assembly located between the rotor assembly and the metering element and having sliding contact with the exterior of the metering element whereby said elongate guide surface functions to prevent any lateral movement of the rotor assembly relative to said metering element during movement of the rotor assembly with respect to the element.

24. A carburetor for an internal combustion engine comprising,



a housing having a fuel-air mixing chamber in its lower portion and a fuel inlet in its upper portion,

a rotor assembly movable vertically within the housing and having a disk-like rotor member rotatably mounted on its lower end, said rotor member being disposed within the fuel-air mixing chamber,

the fuel-air mixing chamber being formed by a generally annular wall and having an air inlet in its upper central portion, the chamber being defined by a first upper inwardly inclined wall surface which overlies the upper surface of the rotor member, a second wall surface of increasing diameter extending downwardly from the first wall surface and a third wall surface of decreasing diameter extending downwardly from the second surface to the outlet,

resilient means between the rotor assembly and the housing urging the assembly and its rotor member upwardly within the chamber and into close proximity to said first and second wall surfaces to substantially close the air inlet to said chamber,

means on the upper surface of the rotor responsive to the incoming air flow for rotating said rotor when the air inlet is opened by downward movement of the rotor member within the chamber.

said rotor member coacting with the first and second wall surfaces as said member moves downwardly to cause the incoming air to change direction and then flow across the

upper surface of the member and again change direction as it passes downwardly around the periphery of the rotor member, such change creating sufficient inertial force to assure rotation of the rotor member instantaneously upon downward movement of the rotor, and

a metering valve within the housing comprising a metering element mounted in a stationary position in the housing and a metering orifice carried by the rotor assembly,

means for conducting fuel from the fuel inlet to said metering valve, and

additional means for conducting the fuel which passes the metering valve to and through the rotor of said rotor assembly to distribute said fuel within the air in the fuel-air mixing chamber.

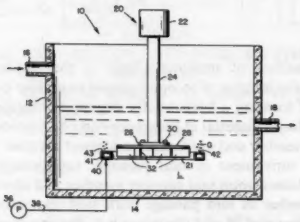
4,207,275
MIXING APPARATUS

James L. Stanton, Jr., Rochester, and William H. Kipple, Spencerport, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

Continuation of Ser. No. 631,287, Nov. 12, 1975, abandoned, which is a continuation of Ser. No. 456,107, Mar. 29, 1974, abandoned. This application Jan. 13, 1977, Ser. No. 758,900

Int. Cl.[2] C02C *5/04*

U.S. Cl. 261—93 **8 Claims**



1. In an apparatus for mixing a liquid with a gas including a tank with said liquid therein, a circulating means for creating a radial flow of said liquid to circulate said liquid in said tank, said circulating means comprising a rotatable shaft, a disc mounted on said shaft, and a plurality of blades extending downwardly from a bottom surface of said disc so that rotation of said plurality of blades creates a suction area, said suction area being the only suction area created by said circulating means, the improvement including:

sparge ring means having a discharge means with a radius that is larger than the distance from the center of said disc to outer tip of said blades, said discharge means being axially positioned so as to introduce said gas into a zone extending axially downward from said disc a distance approximately equal to the height of said blades for introducing gas into said tank in a direction that bypasses said suction area to prevent gas from flowing into said suction area.

4,207,276
EASILY MAINTAINED BUBBLE-CAP COLUMN FOR THE DISTILLATION OF CLOGGING AND HIGH-SEDIMENT LIQUIDS

Pentti P. Ronkainen, Espoo; Olavi A. Leppänen, Vantaa; Kyösti T. Vento, and Heimo K. Pesonen, both of Rajamäki, all of Finland, assignors to Oy Alko AB, Helsinki, Finland

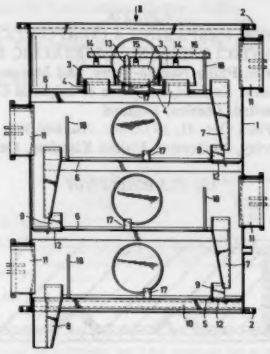
Filed Oct. 4, 1978, Ser. No. 948,592

Claims priority, application Finland, Oct. 14, 1977, 773048

Int. Cl.[2] B01F *3/04*

U.S. Cl. 261—114 A **2 Claims**

1. In a bubble-cap column for the distillation of high sediment or clogging liquids including a plurality of apertured plates arranged in spaced vertical relationship, each plate having a plurality of bubble-cap structures arranged in rows thereon and each comprising a bubble-cap overlying a neck portion extending through an aperture in said plate, the improvement wherein said bubble-cap structure are readily detachable from said plates and are removable through hatches



provided in said column, the inner surfaces of said bubble-cap and said inner and outer surfaces of said neck portion being coated with an organic fluorine compound to which agglomerating sediments do not readily adhere.

4,207,277
FLOAT CHAMBER MEANS FOR A CARBURETOR

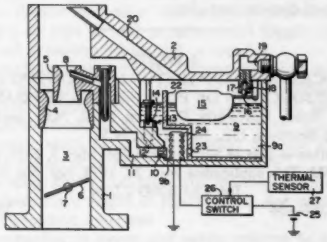
Masakatsu Sanada, and Toshimitsu Ito, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Dec. 21, 1977, Ser. No. 862,840

Claims priority, application Japan, Oct. 19, 1977, 52-125301

Int. Cl.[2] F02M *15/04*

U.S. Cl. 261—130 **8 Claims**



1. A fuel supply system comprising a carburetor having:

a body;

a float chamber;

a fuel inlet port opening into the float chamber to supply fuel thereinto;

a fuel outlet port opening from the float chamber at a lower portion thereof to deliver fuel therefrom;

a vent port opening from said float chamber at an upper portion thereof to vent gases therefrom;

a heating element provided in the float chamber so as to be horizontally apart from the fuel outlet port to heat the fuel in the float chamber;

a passage space left in the float chamber which allows gases generated from the fuel heated by said heating element to reach said upper portion of the float chamber due to its own buoyancy; and

automatic control means including thermal sensor means connected to energize said heating element when a temperature representative of the temperature of the carbure-

tor body is higher than a reference temperture and in the range of temperatures above moderate normal operating tempertures and to de-energize the heating element when said temperature is lower than said reference temperature.

4,207,278

METHOD FOR PREPARING A COMPOSITE FOAMED RESIN ARTICLE HAVING A METALLIC LAYER

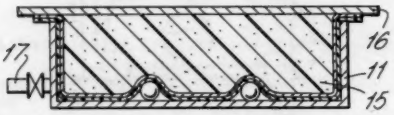
Geoffrey Cowen; Philip Norton-Berry, and Margaret L. Steel, all of Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Oct. 21, 1977, Ser. No. 844,387

Claims priority, application United Kingdom, Oct. 26, 1976, 44409/76

Int. Cl.[2] B29D *27/04*

U.S. Cl. 264—46.4 **15 Claims**



1. A method for the preparation of composite products comprising a laminated sheet and a foam backing adhering thereto, the laminated sheet consists of adjacent layers being adhesively or mechanically bonded to each other, and forming at least part of a non-planar surface of the composite product, one of the said layers being a metallic layer wherein the metal is selected from the group consisting of aluminum, gold, silver, nickel, chromium, copper, stainless steel and an alloy of said metal, and the other layer being a film of a thermoplastic material, which method comprises expanding the foam, or a precursor therefor, in contact with the laminated sheet such that the foam adheres to the laminated sheet and forms a backing therefor and such that the pressure generated during expansion of the foam extends at least at proportion of the laminated sheet and forces it into a desired shape, wherein the metallic layer has a thickness between 20 A° and 1μ and is in the form of discrete particles.

4,207,279

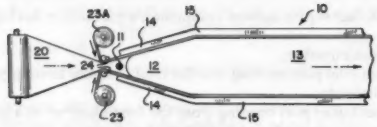
PROCESS AND APPARATUS FOR CONTINUOUS PRODUCTION OF POLYURETHANE FOAM

Derk J. Boon, University Research Park, N.C., assignor to Reeves Brothers, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 793,286, May 3, 1977, Pat. No. 4,158,032. This application Nov. 20, 1978, Ser. No. 962,166

Int. Cl.[2] B29D *27/04*

U.S. Cl. 264—54 **18 Claims**



1. In a process for continuously molding free-rising polyurethane foam in a continuous, laterally translating open top mold at a given bottom conveyor velocity by depositing a polyurethane foam forming mixture of reactants at a given feed rate on a pouring board, the improvement comprising increasing the height of the molded flexible polyurethane foam product obtained by (i) depositing said polyurethane foam forming mixture of reactants near the apex of a first mold portion of the laterally translating mold, which first portion of said laterally translating mold has divergent first side walls which form an angle therebetween of more than about 10° and less than about 120° and which join, at their extremeties, the parallel second side walls of a second portion of said translating mold, and (ii) allowing said polyurethane foam forming mixture of reactants to substantially complete its rise after traversing past said first portion of the translating mold.

4,207,280

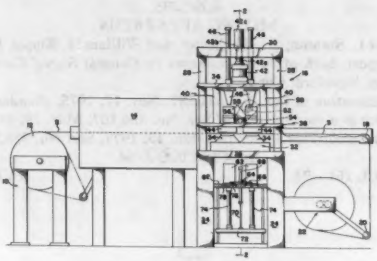
CONTAINER LINING METHOD

George A. West, Clare; William F. Kent, Beaverton; George L. Pickard, Beaverton, and Wilbur P. Winton, Beaverton, all of Mich., assignors to Leesona Corporaton, Beaverton, Mich.

Filed Sep. 5, 1978, Ser. No. 939,875

Int. Cl.[2] B29C *17/04, 27/16*

U.S. Cl. 264—153 **4 Claims**



1. The method of applying a liner of thermoplastic sheet material to the interior of an open topped container comprising the steps of locating a horizontally disposed deformable sheet of thermoplastic material at the upper end of a vertical passage in a guide member and positioning a support member for vertical sliding movement in said passage, supporting an open topped container upon said support member and elevating said support member in said passage with said container thereon until the upper end of said container is at the upper end of said passage with the top of the container in underlying engagement with said sheet of thermoplastic material, deforming that portion of the sheet overlying the container downwardly from the plane of the sheet into the interior of the container to line the interior of the container; shearing said portion of said sheet from the remainder of the sheet around the outer upper periphery of the container, and ejecting the lined container by elevating the lined container upwardly through the opening thus sheared in said sheet for removal from said support member.

4,207,281

METHOD OF EXTRUDING SEMI-FLUID MATERIAL THROUGH A HEATED EXTRUDER NOZZLE AND HEATED EXTRUDER NOZZLE

Vincent E. Bernard, Richardson, Tex., assignor to The Jimmy Dean Meat Company, Inc., Dallas, Tex.

Filed Jun. 12, 1978, Ser. No. 914,862

Int. Cl.[2] B29F *3/08;* A22C *11/00;* A23L *1/31*

U.S. Cl. 264—176 R **15 Claims**

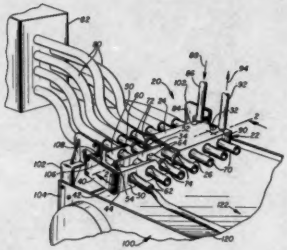
1. A method of extruding semi-fluid material comprising:
pumping the semi-fluid material through a plurality of conduits,
simultaneously circulating a heated fluid through a first chamber surrounding the conduits,
circulating fluid from the first chamber to a second chamber surrounding the conduits, and
exhausting fluid from the second chamber.

3. A heated extruder nozzle comprising:
a chamber having a baffle wall therein dividing the chamber into a first and a second baffle area, said first and second baffle areas being in fluid communication by way of an opening therebetween,
a plurality of extruder tubes extending through the first and

second baffle areas for carrying a semi-fluid mixture therethrough,

inlet means for receiving heated fluid into the first baffle area,

outlet means for discharging heated fluid from the second baffle area, and



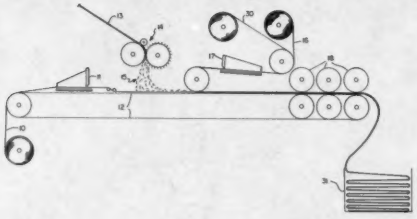
communication means for communicating fluid from the first baffle area to the second baffle area to permit the flow of fluid from the inlet means to be discharged through the outlet means.

4,207,282

METHOD FOR MOLDING REINFORCED POLYMERIC ARTICLES

William E. Grisch, St. Charles, Ill., assignor to Armco Inc., Middletown, Ohio

Filed Jun. 1, 1978, Ser. No. 911,491
Int. Cl.[2] B29H *9/02*
U.S. Cl. 264—257 **9 Claims**



1. A method for producing a corrosion-resistant molded product comprising

(a) introducing onto a die element of a matched die molding apparatus a composite comprising a uniform layer of a dry curable thermosetting polymeric material capable of being liquified by heat including a reinforcing proportion of reinforcing fibers, and a fabric overlying at least one surface of said layer, said fabric having a grab break strength of at least 10 pounds (4.5 kg.) in both longitudinal and transverse directions, and a tensile elongation of at least 10%, said fabric being sufficiently permeable to permit liquid polymeric material to pass therethrough during compression molding; and

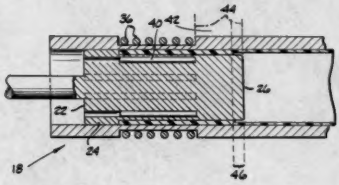
(b) compression molding and curing said polymeric material by closing said die members and subjecting said polymeric material to a pressure of 500–3000 psi (35 to 210 kg. per sq. cm.) and a temperature of 100°–165° C., said temperature and pressure causing said polymeric material to be liquified and to flow through the fabric while said fabric holds said fibers from passing therethrough, thus creating a cured polymeric material layer on the other side of said fabric and producing said corrosion-resistant molded product.

4,207,283

METHOD OF POST THICKENING ONE END SECTION OF A PLASTIC PIPE

David W. French, Littleton, Colo.; Richard C. Faber, Denison, Tex., and Wayne D. Weger, Colbert, Okla., assignors to Johns-Manville Corporation, Denver, Colo.

Continuation-in-part of Ser. No. 722,187, Sep. 17, 1976, abandoned. This application Jul. 10, 1978, Ser. No. 922,947
Int. Cl.[2] C04B *35/60*
U.S. Cl. 264—322 **8 Claims**



1. A method of forming an end section on a plastic pipe by thickening the pipe wall of said end section, said method comprising:

(a) heating a predetermined length of said pipe to its state of thermal deformability;

(b) providing a longitudinally extending circumferential cavity having an outer diameter approximately equal to the outer diameter of said pipe, and an inner diameter approximately equal to the desired inner diameter of said end section after thickening thereof, said cavity being at least equal in length to the length of said end section and having a closed back and an open front end;

(c) positioning said predetermined length of said pipe entirely within said cavity such that a remainder of said plastic pipe extends from said front end of said cavity;

(d) moving said cavity and said pipe relative to one another and thereby forcing at least said predetermined length of said pipe to deform within and partially fill said cavity so as to thicken the wall of said at least said predetermined length of pipe as said predetermined length of pipe is forced to deform within said cavity;

(e) applying a predetermined amount of heat to said cavity from points along the length of and circumferentially around the inner and outer surfaces thereof, said points extending from the back end of said cavity towards, but stopping short of, a predetermined distance from said front end so as to define a transition zone;

(f) allowing heat to migrate from the then deforming said predetermined length of pipe into the pipe positioned in said transition zone; and

(g) continuing to move said cavity relative to said pipe, thereby forcing said pipe positioned in said transition zone to deform and substantially fill said cavity.

4,207,284

METHOD OF MAKING PLASTIC DRUM ASSEMBLIES WITH PREFORMED INSERTS

Charles A. Speas, Towson, Md., assignor to Hedwin Corporation, New York, N.Y.

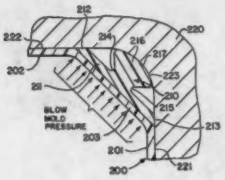
Filed Apr. 13, 1977, Ser. No. 787,153
Int. Cl.[2] B29C *17/07*; B29D *3/02*
U.S. Cl. 264—516 **17 Claims**

1. A method of forming a plastic article in a conventional mold cavity, said article having a corner fused to a preformed plastic insert which is shaped to facilitate handling the article, said method comprising:

providing a mold having said conventional mold cavity with an end wall, a side wall, and a mold corner connecting the end wall to the side wall, said mold cavity being of the type normally used to blow mold conventional plastic

articles having a curved corner between an end wall and a side wall, said mold corner being curved to form said curved corner of said conventional article;

providing said preformed plastic insert, said insert having opposed side edges and being so shaped and dimensioned that said side edges may be engaged respectively flush with said end and side walls of said mold to seal and close off a portion of said corner of said mold from the mold cavity with a portion of one side of said insert spaced from said corner to form at least one recess, said one side being shaped to facilitate handling the article;



positioning said insert in said mold with said one side facing said corner and said edges in engagement respectively with said end and side walls to seal and close off at least a portion of said corner and said at least one recess; and

blow molding a plastic parison into said mold cavity to form said article with at least a portion of the corner thereof deflected from said mold corner and fused to said insert and said insert blocking said parison and preventing said parison from entering the space between said insert and said mold corner and said recess, whereby said article is provided with a recessed corner shaped to facilitate handling the article without modifying the configuration of said mold cavity.

4,207,285

ALKANOLAMINE SALTS OF MALEAMIC ACIDS AS ANTI-CORROSION AGENTS IN AQUEOUS SYSTEMS

Knut Oppenlaender, Ludwigshafen; Wolfgang Kindscher, Fussgoenheim, and Elmar Getto, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 20, 1978, Ser. No. 971,234

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758123

Int. Cl.[2] C23F *11/14*

U.S. Cl. 422—16 **4 Claims**

1. A method of preventing corrosion of metals in industrial processes taking place in the presence of water, wherein a mono-, di- or tri-C_2— to —C_3-alkanolamine salt of a maleamic acid of the formula I

R-NHCO-CH=CHCOOH I

where R is an isoalkyl radical in which the longest chain is of 6 to 8 carbon atoms, whilst the entire radical is of 8 to 12 carbon atoms, is employed as a low-foam corrosion inhibitor.

4,207,286

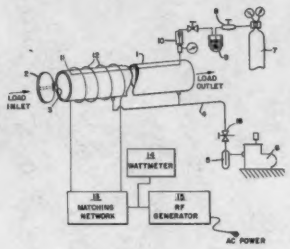
SEEDED GAS PLASMA STERILIZATION METHOD

Raymond M. Gut Boucher, New York, N.Y., assignor to Biophysics Research & Consulting Corporation, New York, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,374

Int. Cl.[2] A61L *1/00, 5/00, 13/00, 13/02*

U.S. Cl. 422—21 **12 Claims**



1. A method of sterilizing a surface comprising contacting said surface with a low temperature gas plasma containing at least 10 mg/l of an aldehyde under subatmospheric pressure.

4,207,287

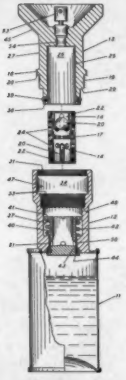
CONTACT LENS STERILIZER APPARATUS

Robert H. Lindquist, Berkeley, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 819,314, Jul. 27, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 29,098

Int. Cl.[2] A61L *3/00*

U.S. Cl. 422—33 **4 Claims**



1. Apparatus for sterilizing an article comprising:

means forming an article-receiving chamber;

an article holder having liquid passageways formed therein to permit liquid and gas contact of an article therein after enclosure in said holder;

first threaded closure means for enclosing said article holder in said chamber means;

additional threaded means for threadably securing said chamber means to a source of sterilizing fluid;

a source of sterilizing fluid; fluid passage means formed between said source and said chamber means through said additional threaded securing means;

sealing means between said chamber means and said fluid passage means operable in response to engagement of said additional threaded means for isolating said chamber

means from the atmosphere and sealing said chamber to said source of sterilizing fluid;

valve means in said fluid passage means, said valve means being operable after actuation of said sealing means so that upon actuation of said valve means an article in said chamber means may be exposed to sterilizing fluid from said source;

said valve means being further operable to close said passage means to isolate said chamber means from said source while maintaining said chamber means isolated from the atmosphere after exposure of said article and before disassembly of said chamber means from said source;

second fluid passage means formed in said chamber means and relief valve means for controlling flow through said second fluid passage means for reducing the pressure in said chamber means substantially to atmospheric pressure before disengagement of said additional threaded means and said sealing means.

4,207,288

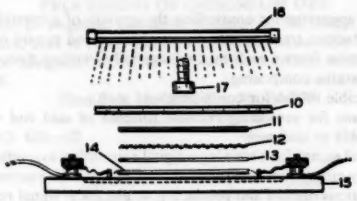
PHOTOINITIATOR SYSTEM FOR PHOTOPOLYMERIZABLE COMPOSITIONS

Caroline A. Cauler, Lancaster, and Richard M. Fantazier, Columbia, both of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 699,711, Jun. 25, 1976, abandoned. This application Apr. 10, 1978, Ser. No. 895,258

Int. Cl.[2] G01K *7/00;* **G01N** *25/20, 33/00;* **B01J** *31/02*

U.S. Cl. 422—51 **2 Claims**



1. An apparatus for measuring an exothermic reaction in a photopolymerizable, ethylenically-unsaturated mass which apparatus comprises:

(a) a thin foil differential thermocouple means;

a thin, small pore means capable of retaining said photopolymerizable, ethylenically-unsaturated mass adjacent to and mounted above said thermocouple means;

(c) a perforated plate means opaque to ultraviolet light positioned above said small pore means; and

(d) an ultraviolet light source means positioned above said plate means, said above four means being positioned one above to other to permit the ultraviolet light source means to pass ultraviolet light rays through said perforated plate means and irradiate said mass mounted on said pore means.

4,207,289

SAMPLE TUBE HOLDER

Michael D. Weiss, 6770 SW. 122 Dr., Miami, Fla. 33156

Filed Jul. 3, 1978, Ser. No. 921,725

Int. Cl.[2] G01N *1/10*

U.S. Cl. 422—104 **6 Claims**

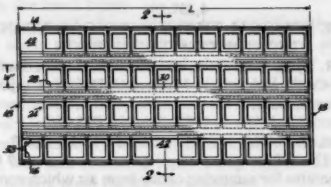
1. A sample tube holder, comprising, in combination,

a frame structure defining at least one elongate channel,

a plurality of sample tube receiving containers adapted to be slideably positioned within said elongate channel,

a portion of said channel being empty when said containers are positioned within said channel so that a sample tube-receiving container or group of containers may be physically separated, when the contents of said sample tube or tubes have been manipulated, from the other containers in such channel the contents of which have not been manipulated,

said frame structure being lidless so that the manipulation of sample tube contents is accomplished while said tubes and



associated containers are positioned within said channel so that such tubes need not be removed from the sample tube holder at any time from commencement to completion of the assay.

4,207,290

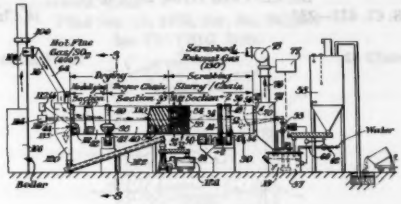
FLUE GAS SCRUBBER

Terry J. Lee, Easton, Pa., assignor to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 782,760, Mar. 30, 1977, and a continuation-in-part of Ser. No. 621,052, Oct. 9, 1975, abandoned. This application Dec. 15, 1977, Ser. No. 860,710

Int. Cl.[2] B01J *2/12, 8/10*

U.S. Cl. 422—109 **23 Claims**



1. A flue gas scrubber for treating a flue gas with a slurry to remove components therefrom, comprising an elongated tubular drum having a longitudinal axis and a pair of ends, rotating means mounting the tubular drum to revolve the drum about its longitudinal axis, the tubular drum having a scrubbing section and a drying section at opposite ends separated by a slurry-retaining dam, a gas inlet disposed at the drying end for introducing a flow of previously-combusted flue gas from a stack into the tubular drum for longitudinal flow through it from the drying to the scrubbing end, a slurry-feeding means on the tubular drum for introducing a flow of aqueous slurry into the tubular drum for longitudinal flow through it from the scrubbing to the drying end, the dam and slurry-feeding means maintaining a pool of slurry in the scrubbing section having a free moisture content ranging from about 50 to 80 percent by weight to facilitate the removal of gas components and replenishing the flow of slurry through the pool, tumbling means in the scrubbing section for intimately mixing the slurry with the gas to cause the slurry to combine with components of the gas and form a reaction product, a gas-collecting and-removing means connected to the scrubbing end for collecting and removing the gas which passes through the tubular drum, the drying section being long enough to expose the reaction product travelling through it to the heat of the flue gas for reducing the free moisture content of the reaction product to about 5 to 25 percent by weight, whereby the flue gas is cooled before it flows into the scrubbing section, its solubility in the slurry is increased, its volume is reduced, the removal of the gas component by the slurry is prolonged and increased and formation

of a physically strong agglomerated dry reaction product is promoted, and discharge means disposed at the drying end of the tubular drum for conducting the substantially dry reaction product from the scrubber.

4,207,291

OZONE REMOVAL FILTER HAVING MANGANESE DIOXIDE COATED THEREON

Norman R. Byrd, Villa Park, and Reino E. Luoto, Santa Ana, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Apr. 3, 1978, Ser. No. 892,976
Int. Cl.[2] B01D *1/14;* B01J *23/34;* C01B *13/08*
U.S. Cl. 422—122 **19 Claims**

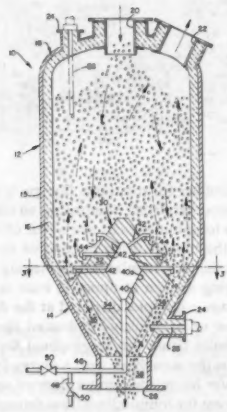
13. Apparatus for removing ozone from air which comprises in combination, an air duct, a filter positioned in said air duct, said filter comprising a substrate formed of a porous lightweight thermally stable material containing a manganese dioxide coating deposited on said substrate from a permanganate solution, said substrate being a member selected from the group consisting of polybenzimidazole, a polyamide, a polyimide, a phenolic polymer, and derivatives and mixtures thereof and means for mounting said filter in said air duct for passage of air containing ozone through said filter.

4,207,292

SYSTEM FOR REDUCING SULFUR DIOXIDE

William F. Bischoff, Califon, and Peter Steiner, Edison, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 24, 1978, Ser. No. 936,464
Int. Cl.[2] C01B *17/04;* B01J *8/12*
U.S. Cl. 422—232 **14 Claims**



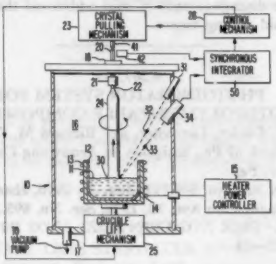
1. A system for reducing sulfur dioxide comprising a vessel, inlet means located in the upper portion of said vessel for receiving coal, means for discharging sulfur dioxide into the lower portion of said vessel in a downward direction so that it rises upwardly in the vessel in a counterflow relation to the coal to oxidize the coal and convert it to ash and to convert the sulfur dioxide to elemental sulfur, said discharging means comprising a plurality of nozzles disposed in said vessel and adapted to discharge said sulfur dioxide downwardly into the lower portion of said vessel, and a flow distribution member disposed in said vessel and having a plurality of through passages formed therethrough, each of said passages being disposed at a predetermined angle relative to the longitudinal axis of said vessel, said coal flowing through said passages to promote a uniform and continuous flow of coal through said vessel, said discharging means further comprising a piping system connected to a source of said sulfur dioxide, extending through bores formed in said flow distribution member and connected to said nozzles.

4,207,293

CIRCUMFERENTIAL ERROR SIGNAL APPARATUS FOR CRYSTAL ROD PULLING

Richard A. Scholl, Palo Alto, and John L. Cole, Fremont, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 682,293, May 3, 1976, abandoned, which is a continuation of Ser. No. 479,316, Jun. 14, 1974, abandoned. This application Dec. 5, 1977, Ser. No. 857,331
Int. Cl.[2] B01D *9/00;* B01J *17/18;* G01N *21/48*
U.S. Cl. 422—249 **14 Claims**



1. An apparatus for controlling the growth of a crystal rod in the direction transverse to the axis of said rod as said rod is being drawn from a melt in a substantially vertical direction, said apparatus comprising:

a. crucible means for containing said melt;

b. means for providing relative rotation of said rod with respect to said melt;

c. signal means for obtaining a signal responsive to a substantially circumferential dimension of said rod for successive rotations thereof and producing an electrical signal representative of said circumferential dimension obtained in a prior rotation, said signal means comprising a single sensor for sensing a substantially transverse dimension of said rod and developing a transverse signal and integration means for integrating said transverse signal whereby said circumferential representative signal is produced;

d. means for comparing successive circumferential representative signals and generating a correction signal which is indicative only of change in said circumferential dimension; and

e. means responsive to said correction signal for adjusting the rate at which said rod is drawn from said melt which effects the growth of said rod in said transverse direction.

4,207,294

PROCESS FOR RECOVERING URANIUM FROM WET-PROCESS PHOSPHORIC ACID

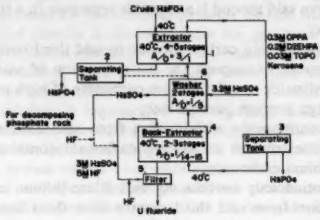
Shuichiro Hirono, Kamisaibara, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Apr. 10, 1978, Ser. No. 895,104
Claims priority, application Japan, Apr. 14, 1977, 52-42968
Int. Cl.[2] B01D *11/04*
U.S. Cl. 423—10 **6 Claims**

1. A process for recovering uranium from a wet-process phosphoric acid crude solution produced by the acid-treatment of uncalcined phosphate rock which comprises contacting the phosphoric acid crude solution with an organic extractant consisting of octylphenyl phosphoric acid, di(2-ethylhexyl)-phosphoric acid and trioctylphosphine oxide dissolved in an organic diluent to extract uranium from the phosphoric acid crude solution, and then contacting the thus uranium loaded

organic extractant with mixed acid consisting of hydrofluoric acid and sulfuric acid to back-extract the uranium as uranium fluoride precipitate from the organic extractant.

4. A process for recovering uranium from a wet-process phosphoric acid crude solution produced by the acid-treatment of uncalcined phosphate rock which comprises contacting the



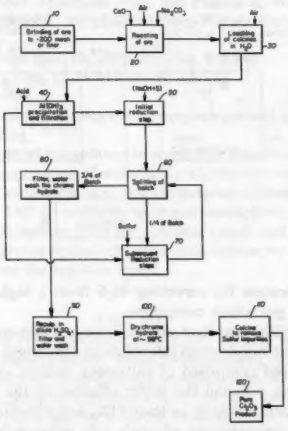
phosphoric acid crude solution with an organic extractant consisting of octylphenyl phosphoric acid, di(2-ethylhexyl)-phosphoric acid and trioctylphosphine oxide dissolved in an organic diluent to extract uranium from the phosphoric acid crude solution, and then contacting the thus uranium loaded organic extractant with concentrated phosphoric acid to back-extract the uranium from the organic extractant.

4,207,295

PROCESSING OF CHROMIUM ORE

Tadashi J. Kagetsu, Lewiston; William B. De Atley, Grand Island, both of N.Y., and Joseph S. Fox, Altamonte Springs, Fla., assignors to Union Carbide Corporation, New York, N.Y.

Filed Feb. 13, 1979, Ser. No. 11,868
Int. Cl.[2] C01G 37/02
U.S. Cl. 423—55 **24 Claims**



1. A method for recovering chrome hydrate from chromium ore which comprises:

(i) roasting in a gaseous oxidizing environment a mixture of chromium ore with Na_2CO_3 and CaO at a temperature in the range of about 600° C. to 1100° C. for from about 0.5 to 6 hours, the amount of Na_2CO_3 being that which provides from about 1.4 to 4.2 pounds of Na_2CO_3 per pound of Cr_2O_3 in the ore and the amount of CaO being that which provides from about 0.6 to 1 pound of CaO per pound of Cr_2O_3 in the ore;

(ii) water leaching the roasted material obtained in step (i) at a temperature of from about 5° C. to the boiling point of water for from about 5 minutes to 5 hours;

(iii) adding an acid to the leach liquor obtained in step (ii) to provide a pH of from about 3 to 9.5 to cause precipitation of aluminum impurities and separating said impurities from the leach liquor;

(iv) contacting the liquor obtained in step (iii) with an aqueous slurry of NaOH and elemental sulfur at about the boiling point and additional elemental sulfur with the NaOH and elemental sulfur slurry and the additional elemental sulfur being in an amount sufficient to effect the reduction of the chromium values in the contacted liquor from a valence of 6 to 3 forming a chrome hydrate precipitate with said contacted liquor being maintained at about the boiling point during the reduction;

(v) recovering the chrome hydrate precipitate of step (iv) by filtration;

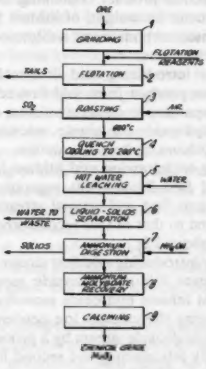
(vi) washing the recovered chrome hydrate of step (v) with water to remove entrained soluble impurities.

4,207,296

PROCESS FOR PRODUCING PURIFIED AMMONIUM MOLYBDATE SOLUTION

Harry H. K. Nauta, Brielle; Jan W. Kok, Poortugaal, and Jan Harte, Vierpolders, all of Netherlands, assignors to Amax Inc., Greenwich, Conn.

Filed Sep. 15, 1978, Ser. No. 942,835
Int. Cl.[2] C01G 39/00
U.S. Cl. 423—61 **44 Claims**



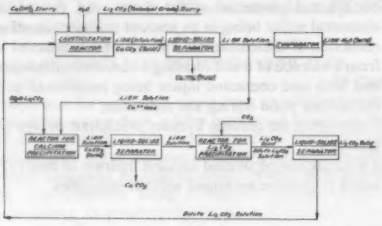
1. A process for producing a purified ammonium molybdate solution from technical grade molybdenum trioxide containing more than about 100 ppm potassium which comprises heating the technical grade molybdenum trioxide to a temperature sufficiently high and for a time sufficiently long to render the potassium soluble in hot water, cooling the heated molybdenum trioxide to a temperature below about 400° C. at a cooling rate of at least about 30° C. per minute, leaching the cooled molybdenum trioxide with hot water to leach potassium therefrom thereby lowering the potassium content of the molybdenum trioxide to less than about 100 ppm, separating the molybdenum trioxide from the leach water, digesting the separated molybdenum trioxide in an ammonium solution to form a purified ammonium molybdate solution and separating the purified ammonium molybdate solution from undigested solids.

4,207,297

PROCESS FOR PRODUCING HIGH PURITY LITHIUM CARBONATE

Patrick M. Brown, Exton, and Charles E. Falletta, Downingtown, both of, Pa. assignors to Foote Mineral Company, Exton, Pa.

Filed Mar. 27, 1978, Ser. No. 890,328
Int. Cl.[2] C01D 15/08, 15/02
U.S. Cl. 423—179.5 **6 Claims**



1. A continuous integrated process for the production of lithium hydroxide monhydrate and high purity lithium carbonate of large average particle size comprising:

(A) converting a continuous feed of impure lithium carbonate to lithium hydroxide in a first reactor by a process comprising:

(1) passing a continuous feed of impure lithium carbonate slurry into said first reactor;

(2) introducing a slurry of calcium hydroxide to said first reactor, whereby lithium carbonate is converted to lithium hydroxide with simultaneous production of calcium carbonate;

(3) continuously withdrawing from said first reactor an aqueous reaction product containing from about 1 to about 3 percent, by weight, of lithium hydroxide containing calcium carbonate and a dilute concentration of soluble calcium ions;

(B) continuously introducing said lithium hydroxide-containing reaction product from said first reactor to a first liquid-solids separator to separate calcium carbonate from said lithium hydroxide-containing reaction product and recovering a lithium hydroxide solution;

(C) continuously withdrawing said lithium hydroxide solution from said first liquid-solids separator and dividing said solution into first and second streams, the volume ratio of said first to that of said second stream being from about 10:1 to about 2:1;

(D) continuously introducing said first stream to an evaporator to precipitate lithium hydroxide monohydrate and recovering said lithium hydroxide monohydrate;

(E) further reducing the calcium ion concentration of said second lithium hydroxide stream by a process comprising:

(1) continuously introducing said second lithium hydroxide stream to a second reactor;

(2) Maintaining said second lithium hydroxide stream in said second reactor at ambient temperature, and introducing to said second reactor carbon dioxide or lithium carbonate in an amount sufficient to precipitate the major portion of said calcium ions as calcium carbonate without precipitation of lithium carbonate;

(3) continuously withdrawing from said second reactor a solution of lithium hydroxide containing calcium carbonate in suspension;

(4) heating said solution of lithium hydroxide from said second reactor to a temperature of from about 130° to about 195° F.;

(F) continuously introducing said heated lithium hydroxide solution from said second reactor to a second liquid-solids separator to separate said calcium carbonate from said lithium hydroxide solution;

(G) converting the major portion of a continuous feed of lithium hydroxide solution from said second liquid-solids separator to solid lithium carbonate product, in which at least about 50 percent, by weight, of the particles are retained on a 140 mesh sieve, and said particles have a lithium carbonate content of at least 99.3 percent, by a process comprising:

(1) passing a continuous feed of lithium hydroxide solution from said second liquid-solids separator to a third reactor;

(2) introducing carbon dioxide to said third reactor in an amount to convert the major portion of said lithium hydroxide to solid lithium carbonate of high purity and large average particle size;

(3) continuously withdrawing from said third reactor a dilute solution of lithium carbonate containing solid lithium carbonate;

(H) continuously introducing said dilute lithium carbonate solution from said third reactor to a third liquid-solids separator to separate solid lithium carbonate; and

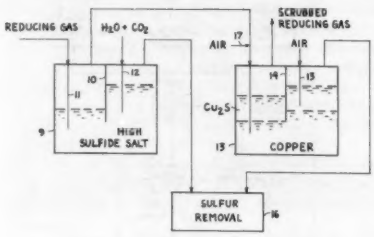
(I) continuously recycling said dilute lithium carbonate solution from said third liquid-solids separator to said first reactor.

4,207,298

HIGH TEMPERATURE REMOVAL OF H_2S FROM REDUCING GAS

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 616,369, Sep. 24, 1975. This application Jan. 5, 1978, Ser. No. 867,323
Int. Cl.[2] B01D 53/34
U.S. Cl. 423—210.5 **11 Claims**



1. A process for scrubbing H_2S from a high temperature reducing gas which comprises:

a. establishing at least two separate and non-communicating molten nonaqueous salt solutions comprised of alkali cations and comprised of carbonate, sulfide, and hydroxide anions, wherein the sulfur affinities of the different salt solutions differ by at least 10%, and wherein the hydroxide concentration of each salt solution is maintained within the limits of 0.4% to 25% and the sulfide concentration of each salt solution is maintained within the approximate limits of 1% to 70%;

b. routing the reducing gas serially through contact with each salt solution in order of decreasing equilibrium pH_2S, whereby H_2S is scrubbed from the reducing gas by each salt solution and a scrubbed reducing gas results;

c. separately routing a regenerate gas comprised of steam or steam and CO_2 serially through contact with each salt solution in order of increasing equilibrium pH_2S, whereby an H_2S containing regenerant gas is obtained.

4,207,299

SULPHUR DIOXIDE REMOVAL PROCESS

John F. Flintoff, Middlesbrough, England, assignor to Davy Powergas, Inc., Lakeland, Fla.

Continuation of Ser. No. 769,400, Feb. 16, 1977, abandoned. This application Aug. 30, 1978, Ser. No. 937,973

Int. Cl.[2] C01B *17/00;* C01D *3/06;* C01B *17/45;* C01D *5/00*

U.S. Cl. 423—242 15 Claims

1. In a process for the removal of sulfur dioxide from gas in which sulfur dioxide is absorbed from the gas in an aqueous absorption solution of sodium sulfite to form the corresponding bisulfite, resulting bisulfite-containing absorption solution is desorbed to form sulfur dioxide, and a sulfite-containing absorption solution is regenerated for recycling, and in which sodium sulfate is in solution in the spent absorption medium from said absorption, the improvement for removing sulfate from the system which comprises evaporating water from a portion of said spent absorption medium which contains in solution sodium bisulfite, about 1 to 10 weight percent of sodium sulfate and about 0.1 to 10 weight percent of sodium sulfite, said spent absorption medium having a major amount of sodium bisulfite on a dry basis, at a temperature of about 37° to 120° C. to precipitate about 1 to 20 weight percent based on said spent absorption medium of solids derived from said spent absorption medium, said precipitated solids containing a major amount of sodium sulfate and a minor amount of sodium sulfite, separating sulfate- and sulfite-containing precipitate and bisulfite-containing solution from resulting slurry, providing sufficient of said precipitated sodium sulfate- and sulfite-containing solids derived from said portion of spent absorption medium, in solution in said spent absorbing medium from which said solids are precipitated by evaporation of water to increase the sodium sulfate concentration in said solids, and desorbing sulfur dioxide from said bisulfite-containing solution.

4,207,300

PROCESS FOR THE PREPARATION OF ORTHOPHOSPHOROUS ACID AND PHOSPHINE

Mark O. Kestner, Mendham, N.J., and Pamela J. Teliszczak, Carpentersville, Ill., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 18, 1978, Ser. No. 970,846

Int. Cl.[2] C01B *25/06, 25/163*

U.S. Cl. 423—299 5 Claims

1. A process for preparing orthophosphorous acid and phosphine comprising

adding elemental phosphorus to a reaction vessel containing a mixture consisting of water, a C_1–C_6 aliphatic carboxylic acid and hydroiodic acid at a temperature between about 100° and 130° C. under an inert gas atmosphere;

collecting phosphine from the reaction vessel; and

distilling aqueous hydroiodic acid, said carboxylic acid and water from the reaction vessel.

4,207,301

PROCESS FOR PRODUCING ZINC PHOSPHATE

Natalia E. Danjushevskaya, ulitsa Dibunovskaya, 63, kv. 32; Olga V. Alexeeva, Menshikovsky prospekt, 3, kv. 47; Bella G. Pogostkina, prospekt Ispytatelei, 11/1, kv. 412; Valentina M. Kovalenko, ulitsa Bukharestskaya, 94, korpus 1, kv. 306, and Zinaida A. Mironova, Liqovsky prospekt, 3/9, kv. 25, all of Leningrad, U.S.S.R.

Filed Mar. 9, 1979, Ser. No. 19,151

Claims priority, application U.S.S.R., Mar. 14, 1978, 2589500

Int. Cl.[2] C01B *25/37*

U.S. Cl. 423—305 3 Claims

1. A process for producing zinc phosphate comprising treating zinc oxide with phosphoric acid in an aqueous medium at a temperature ranging from 70° to 80° C. in the presence of metallic zinc taken in an amount of from 1 to 10% by weight of zinc oxide, followed by separation of the resulting residue of zinc phosphate.

4,207,302

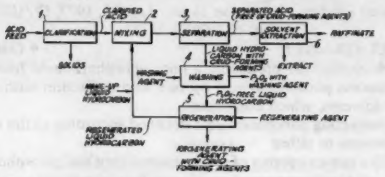
METHOD OF TREATING PHOSPHORIC ACID TO PREVENT CRUD FORMATION DURING SOLVENT EXTRACTION

Jay C. Smith, Gonzales, La., assignor to Freeport Minerals Company, New York, N.Y.

Continuation-in-part of Ser. No. 489,590, Jul. 18, 1974, abandoned. This application Feb. 10, 1976, Ser. No. 656,981

Int. Cl.[2] C01B *25/18*

U.S. Cl. 423—321 S 21 Claims



1. A method of treating wet-process phosphoric acid to remove crud-forming agents, prior to treating the phosphoric acid with an organic extraction solvent, comprising the steps of:

(a) mixing the phosphoric acid with a liquid consisting of a hydrocarbon, the volume ratio of liquid hydrocarbon to phosphoric acid being in the range of from about 0.1 to 10, to remove a substantial portion of the crud-forming agents from the phosphoric acid by entraining the crud-forming agents in the liquid hydrocarbon but without dissolving at least the major portion of the removed crud-forming agents in the liquid hydrocarbon; the liquid hydrocarbon being essentially insoluble and immiscible in the phosphoric acid and having a boiling point above the temperature at which the steps of said method are carried out;

(b) separating the liquid hydrocarbon, containing entrained crud-forming agents, from the phosphoric acid;

(c) mixing the liquid hydrocarbon with an aqueous base in an amount and concentration effective to transfer substantially all of the crud-forming agents mostly in the form of suspended matter from the liquid hydrocarbon to the aqueous base; the volume of aqueous base to the volume of the mixture of liquid hydrocarbon and crud-forming agents being at least about 0.3; and then

(d) separating the aqueous base from the liquid hydrocarbon to regenerate the liquid hydrocarbon for reuse in mixing with phosphoric acid.

11. A method of treating wet-process phosphoric acid to remove crud-forming agents, prior to treating the phosphoric acid with an organic extraction solvent, comprising the steps of:

(a) mixing the phosphoric acid with a liquid consisting essentially of a hydrocarbon, the volume ratio of liquid hydrocarbon to phosphoric acid being in the range of from about 0.1 to 10, to remove a substantial portion of the crud-forming agents from the phosphoric acid by entraining the crud-forming agents in the liquid hydrocarbon but without dissolving at least the major portion of the removed crud-forming agents in the liquid hydrocarbon; the liquid hydrocarbon being essentially insoluble and immiscible in the phosphoric acid and having a boiling point above the temperature at which the steps of said method are carried out;

(b) separating the liquid hydrocarbon, containing entrained crud-forming agents, from the phosphoric acid;

(c) washing the liquid hydrocarbon with an immiscible liquid washing agent selected from the group consisting of water and aqueous acid to recover additional phosphoric acid entrained in the liquid hydrocarbon;

(d) mixing the liquid hydrocarbon with an aqueous base in an amount and concentration effective to transfer substan-

tially all of the crud-forming agents from the liquid hydrocarbon to the aqueous base; and then

(e) separating the aqueous base from the liquid hydrocarbon to regenerate the liquid hydrocarbon for reuse in mixing with phosphoric acid.

4,207,303

METHOD FOR PRODUCING PURE PHOSPHORIC ACID

Hiroaki Ishibashi, and Shizuo Tanoue, both of Minamatashi, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Aug. 22, 1978, Ser. No. 935,766
Claims priority, application Japan, Aug. 29, 1977, 52/103380
Int. Cl.[2] C01B *25/22*
U.S. Cl. 423—321 S 9 Claims

1. A method for producing a pure phosphoric acid from a wet process phosphoric acid by two step extraction with organic solvents, which comprises:

(a) subjecting phosphoric acid obtained according to the wet process to either

(1) a step consisting of partly neutralizing said phosphoric acid with one member selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonia, or sulfate, nitrate, halide or phosphate of sodium, potassium, and ammonia, and adding a water-soluble low boiling organic solvent to the resulting material, or

(2) a step consisting of adding a water-soluble low boiling organic solvent to said phosphoric acid and partly neutralizing the resulting material with one member selected from the group consisting of sodium hydroxide, potassium hydroxide, ammonia, or sulfate, nitrate, halide or phosphate or sodium, potassium and ammonia,

(b) the molar ratio of the content of P_2O_5 in the starting wet process phosphoric acid to the amount of said alkali or ammonia or a salt of the foregoing members used, being in the range of 1:0.05 to 1:0.4; and the temperature and time of said neutralization being in the range of 0°–60° C. and of 5–500 minutes, respectively;

(c) separating the resulting precipitate,

(d) distilling off said water-soluble low boiling organic solvent from the resulting separated solution,

(e) treating the resulting solution, formed by said distilling off, with an extracting agent comprising diisopropylcarbinol, to extract the phosphoric acid, and

(f) back-extracting the resulting treated solution with water.

4,207,304

PROCESS FOR SULFUR PRODUCTION

David K. Beavon, Pasadena, Calif., assignor to The Ralph M. Parsons Company, Pasadena, Calif.

Filed Jun. 27, 1977, Ser. No. 810,092
Int. Cl.[2] C01B *17/04*
U.S. Cl. 423—569 27 Claims

1. A process for the production of sulfur which comprises:

(a) introducing to a first flame zone of a thermal reaction stage a source of oxygen and a carbonaceous material selected from the group consisting of carbonaceous materials which are liquefiable at at least ambient temperature, particulate solid carbonaceous materials and mixtures thereof in admixture with steam to form, by at least partial oxidation of the carbonaceous material, a reducing flame comprising hydrogen, carbon monoxide, steam and carbon containing materials;

(b) adding liquid sulfur for extraction of the carbon containing materials and sulfur dioxide to the products of the first flame zone to form a second flame zone in the thermal reaction stage having a temperature of at least about 1200° F., wherein a portion of the sulfur dioxide is converted to hydrogen sulfide to the extent of forming from the total of the sulfur species introduced a gas stream wherein the molar ratio of hydrogen sulfide to sulfur dioxide is about 2:1 with thermal formation of additional sulfur by at least reaction of hydrogen sulfide with sulfur dioxide;

(c) rapidly cooling the effluent of the second flame zone in a first cooling zone to a temperature sufficiently low to substantially prevent further reaction of sulfur species present and condense sulfur contaminated with the carbon containing materials;

(d) recycling condensed sulfur contaminated with the carbon containing materials to the second flame zone;

(e) further cooling the effluent of the first cooling zone in a second cooling zone to a temperature between the melting and dew points of sulfur to condense sulfur to yield a vapor stream predominantly containing hydrogen sulfide and sulfur dioxide in a molar ratio of about 2:1;

(f) catalytically reacting the hydrogen sulfide and sulfur dioxide in the vapor stream to form sulfur in at least one Claus catalytic conversion zone maintained at a temperature from about 350° to about 700° F.; and

(g) condensing the formed sulfur.

4,207,305

HEXACOORDINATED RUTHENIUM MODERATED PRODUCTION OF HYDROGEN PEROXIDE AND SULFUR FROM OXYGEN AND HYDROGEN SULFIDE

Steven E. Diamond, Randolph; Frank Mares, Whippany, and Benjamin S. Tovrog, Parsippany, all of N.J., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Apr. 27, 1979, Ser. No. 33,766
Int. Cl.[2] C01B *15/022, 17/04*
U.S. Cl. 423—573 R 13 Claims

1. A process for the production of hydrogen peroxide and elemental sulfur from oxygen and hydrogen sulfide which comprises reacting in the liquid phase a hexacoordinated ruthenium(II) complex with oxygen in the presence of a hydrogen ion donating species under conditions forming hydrogen peroxide and the corresponding hexacoordinated ruthenium(III) complex and reacting the hexacoordinate ruthenium(III) complex with hydrogen sulfide to form elemental sulfur and hydrogen ions and to regenerate the hexacoordinated ruthenium(II) complex, said hexacoordinated ruthenium(III) complex having a reduction potential to ruthenium(II) of no more than +0.68 volts and at least 5 of the 6 ligands being non-labile for both the hexacoordinated ruthenium(II) complex and the hexacoordinated ruthenium (III) complex.

4,207,306

PROCESS FOR PRODUCING POLYCRYSTALLINE CERAMIC OXIDES

Michael Jarcho, Schodack, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 764,266, Jan. 31, 1977, Pat. No. 4,097,935, which is a continuation-in-part of Ser. No. 707,315, Jul. 21, 1976, abandoned, which is a continuation-in-part of Ser. No. 593,303, Jul. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 494,240, Aug. 2, 1974, abandoned. This application Dec. 21, 1977, Ser. No. 862,784
Int. Cl.[2] C01G *49/06*
U.S. Cl. 423—633 2 Claims

1. A process for producing a dense polycrystalline ceramic ferric oxide which comprises reacting ferric ion with hydroxide ion in aqueous medium to produce a gelatinous precipitate of the corresponding hydrous oxide; separating the gelatinous precipitate from solution; heating the gelatinous precipitate up to a temperature of at least 1000° C. but below that at which decomposition occurs and at a rate effective to produce a substantially fracture-free ceramic; and maintaining said temperature for sufficient time to effect the sintering and substantially maximum densification of the resulting product.

4,207,307

SIMULTANEOUS IMMUNOASSAY OF MULTIPLE ANTIGENS AND ASSAY FOR COCAINE METABOLITES

Balkrishena Kaul, West Caldwell, N.J.; Bernard Davidow, Flushing, N.Y., and Stephen J. Millian, East Brunswick, N.J., assignors to Research Corporation, New York, N.Y.

Filed Jan. 21, 1977, Ser. No. 761,078
Int. Cl.[2] G01N *33/16*; A61K *43/00*
U.S. Cl. 424—1 13 Claims

1. A composition which forms a multivalent anti-serum upon immunization of an animal therewith, said multivalent anti-serum being capable of complexing a plurality of antigens in a multiple immunoassay containing at least two of, (1) an antigenic conjugate of ecgonine or the acetate thereof and a peptide, protein or polysaccharide, (2) an antigenic conjugate of carboxylmethylmorphine and a peptide, protein or polysaccharide, (3) an antigenic conjugate of 5-ethyl-5-(1-carboxyl-n-propyl) barbituric acid and a peptide, protein or polysaccharide, (4) an antigenic conjugate of oxazepam and a peptide, protein or polysaccharide, and (5) an antigenic conjugate of nortriptyline or desmethylimipramine and a peptide, protein or polysaccharide, said composition being capable of eliciting a multivalent anti-serum which complexes at least two of the antigens: (1) benzoylecgonine, ecgonine and cocaine, (2) opiates, (3) barbiturates, (4) benzodiazepenes and (5) tricyclic anti-depressants in a multiple immunoassay of said antigens in a biological fluid.

4,207,308

PROCESS FOR PURIFYING IODINATED BILE ACID CONJUGATES

Jerry G. Spenney, Birmingham, Ala., assignor to The United States of America as represented by the Administrator of Veterans Affairs, Washington, D.C.

Continuation-in-part of Ser. No. 719,753, Sep. 2, 1976, abandoned. This application Jun. 13, 1977, Ser. No. 805,960
Int. Cl.[2] A61K *29/00, 43/00*
U.S. Cl. 424—1 19 Claims

1. A process for separating an iodinated cationic bile acid conjugate, said iodinated conjugate being a bile acid or an amino acid or diamine amide-bonded conjugate thereof linked directly or indirectly to a group containing iodine, from a solution also containing the corresponding uniodinated conjugate, comprising applying said solution to the origin of a thin layer chromatography sheet, developing a chromatogram by means of a solvent containing a nitrogen base, whereby a band of iodinated conjugate migrates to a position beyond a band of uniodinated conjugate, and removing said iodinated conjugate; said bile acid being selected from the group consisting of cholic acid, chenodeoxycholic acid, deoxycholic acid and lithocholic acid, and said group containing iodine being selected from the group consisting of tyrosine, tyrosine esters, histidine, histidine esters, tyramine, histamine, phenylpropionic acid, phenylalanine, phenylalanine esters, tryptophane and tryptophane esters.

4,207,309

PHENYLISOQUINOLINE DERIVATIVES AS DIAGNOSTIC AGENTS

Eugenio E. Müller, Via Mangiagalli, 5, Milano, Italy

Filed Oct. 20, 1978, Ser. No. 953,177
Claims priority, application Italy, Feb. 16, 1978, 20307 A/78
Int. Cl.[2] A61K *29/00, 31/47*; G01N *33/16*
U.S. Cl. 424—9 1 Claim

1. A method of differentiating between functional and pathological cases of hyperprolactinemia which comprises orally administering to a patient a unitary dosage of 100–300 mg of a compound selected from the group consisting of 8-amino-2-methyl-4-phenyl-1,2,3,4-tetra-hydro-iso-quinoline hydrogen maleate (nomifensine); 4'-hydroxy-nomifensine; 3'-methoxy-4'-hydroxynomifensine and 3'-hydroxy-4'-methoxy-nomifensine, and thereafter measuring the plasma prolactin level of said patient.

4,207,310

IODINE-AMINE OXIDE DISINFECTANTS

Philip W. Langford, Longwell Green, England, assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 635,396, Nov. 26, 1975, abandoned. This application Oct. 4, 1977, Ser. No. 839,229
Claims priority, application United Kingdom, Nov. 29, 1974, 51844/74; Aug. 28, 1975, 35552/75
Int. Cl.[2] A61L *13/00*
U.S. Cl. 424—150 20 Claims

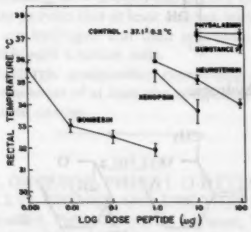
1. A composition comprising iodine dissolved in a tertiary amine oxide selected from the group consisting of N,N-dimethyl benzylamine N-oxide, pyridine N-oxide, and picoline N-oxides, in relative proportions of from about 0.05 to about 6 parts by weight of iodine and from about 2 to about 12 parts by weight of tertiary amine oxide.

4,207,311

PEPTIDES HAVING ANALGESIC AND THERMOREGULATIVE PROPERTIES

Marvin R. Brown; Jean E. F. Rivier, and Wylie W. Vale, Jr., all of La Jolla, Calif., assignors to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 816,441, Jul. 18, 1977, abandoned. This application Nov. 30, 1977, Ser. No. 856,126
Int. Cl.[2] A61K *37/00*; C07C *103/52*
U.S. Cl. 424—177 31 Claims



1. A peptide useful as an analgesic and for the control of thermoregulation of mammals, said peptide having the formula:

H-D-pGlu-Trp-Ala-Val-R_3-His-R_4-R_5-NH_2

wherein: R_3 is selected from the group consisting of D-Ala and Gly; R_4 is selected from the group consisting of Phe and Leu; and R_5 is selected from the group consisting of Met and D-Met.

4,207,312

STABLE AQUEOUS SOLUTIONS OF GLUCANS AND GLUCAN DERIVATIVES CAPABLE OF INHIBITING SARCOMA IN MICE

Mitsuharu Fujii, Ageo; Tatsuo Kuoka, Iwatsuki; Tatsuo Setsuta, Tokyo; Yutaka Iwao, Urawa; Yasumi Yugari; Tsuyoshi Shiio, both of Kamakura; Takashi Yoshihama, Yokohama, and Junji Hamuro, Tokyo, all of Japan, assignors to Ajinomoto Co. Ltd., Tokyo and Morishita Pharmaceuticals Co. Ltd., Osaka, both of, Japan

Filed Feb. 2, 1976, Ser. No. 654,452
Claims priority, application Japan, Feb. 5, 1975, 50-15788
Int. Cl.[2] A61K *31/70, 31/00*
U.S. Cl. 424—180 1 Claim

1. A stabilized solution consisting essentially of water, 0.1 g/dl of lentinan, 0 to 10 g/dl glucose, and water-soluble dextran, the amount of said dextran being 0.1 to 1.0 g/dl, and sufficient for increasing the solubility of said lentinan in water.

4,207,313

ANTHRACYCLINE ANTIBIOTICS

Hamao Umezawa; Tomio Takeuchi, both of Tokyo; Toshikazu Oki, Yokohama, and Taiji Inui, Chigasaki, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

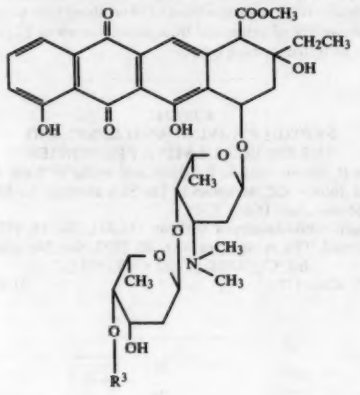
Filed Oct. 3, 1977, Ser. No. 838,617

Claims priority, application Japan, Oct. 5, 1976, 51-120237; May 24, 1977, 52-60908

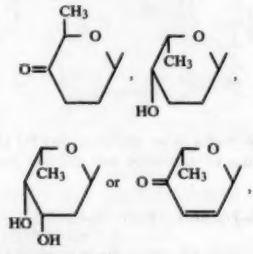
Int. Cl.[2] A61K *31/71*; C07H *15/24*

U.S. Cl. 424—181 **9 Claims**

1. An anthracycline glycoside of the general formula



wherein R^3 is hydrogen,



or a non-toxic acid addition salt thereof or a complex thereof with deoxyribonucleic acid.

9. A pharmaceutical composition comprising an effective antibacterial amount of MA 144-G1, -G2, -L, -S1, -N1, -U1 or -Y, or a non-toxic acid addition salt thereof or a complex thereof with deoxyribonucleic acid, in combination with in inert pharmaceutically acceptable carrier or diluent.

4,207,314

ISOFORTIMICIN

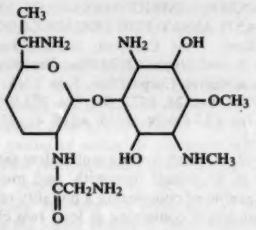
Paulette Collum, Zion, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1977, Ser. No. 863,015

Int. Cl.[2] A61K *31/71*; C07H *15/22*

U.S. Cl. 424—181 **3 Claims**

1. Isofortimicin or a pharmaceutically acceptable salt thereof, said isofortimicin represented by the formula:



3. A pharmaceutical composition comprising a therapeutically effective amount of isofortimicin or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier or diluent.

4,207,315

PROCESS FOR TREATING PROLIFERATIVE SKIN DISEASES USING CERTAIN DIAMINO COMPOUNDS

John J. Voorhees, Ann Arbor, Mich., and Diane H. Russell, Tucson, Ark., assignors to University Patents, Inc., Stamford, Conn. and University of Michigan, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 734,152, Oct. 20, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,877

Int. Cl.[2] A61K *31/675, 31/145*

U.S. Cl. 424—200 **14 Claims**

1. A process for treating a non-malignant proliferative skin disease which comprises administering to the afflicted human or animal, a composition containing as an active component at least one diamino compound selected from the groups consisting of the diamines of saturated and unsaturated aliphatic hydrocarbons having 3 to 6 carbon atoms, the diamines of saturated monocarboxylic acids having 4 to 6 carbon atoms and the alkyl esters thereof containing from 1 to 4 carbon atoms, α-methyl ornithine, α-hydrazino ornithine, trans-3-dehydro-D,L-ornithine, DL-α-difluoromethyl ornithine, and N-(5'-phosphopyridoxyl)-ornithine, said compound being in association with a pharmaceutical carrier wherein the concentration of said active component is effective to alleviate a proliferative skin disease.

4,207,316

NOVEL 17-SUBSTITUTED 11 β-HYDROXY STEROIDS OF THE PREGNANE SERIES, THEIR MANUFACTURE, PREPARATION AND USE

Ernst Schöttle; Alfred Weber; Mario Kennecke; Helmut Dahl; Joachim-Friedrich Kapp; Hans Wendt; Klaus Annen; Henry Laurent, and Rudolf Wiechert, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

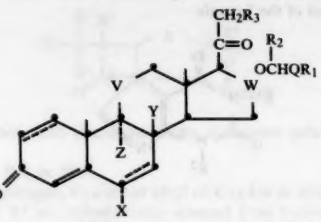
Filed Jan. 25, 1979, Ser. No. 6,693

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1978, 2803661; Dec. 19, 1978, 2855465

Int. Cl.[2] C07J *5/00*; A61K *31/56*

U.S. Cl. 424—243 **79 Claims**

1. A corticoid of the formula



wherein

==represents a single bond or a double bond;

X is hydrogen, fluorine, chlorine or methyl;

Y is hydrogen and Z is hydrogen, fluorine or chlorine, or Y and Z together are a carbon-to-carbon bond;

V is β-hydroxymethylene, β-chloromethylene or carbonyl;

W is methylene, ethylidene or vinylidene;

Q is oxygen or sulfur;

R_1 is alkyl of 1–8 carbon atoms, alkyl of 2–8 carbon atoms with an oxygen atom between two of the carbon atoms or benzyl, and R_2 is hydrogen or alkyl of 1–4 carbon atoms, or

R_1 and R_2 collectively are trimethylene or tetramethylene; and

R_3 is hydrogen, fluorine, chlorine, hydroxy or hydroxy esterified by a C_{1-16} hydrocarbon carboxylic acid.

78. A method of treating inflammation in mammals which comprises administering an anti-inflammatorily effective amount of a compound of claim 1.

4,207,317

1-ARYL-4-CARBAMOYL-PYRAZOLIN-5-ONES

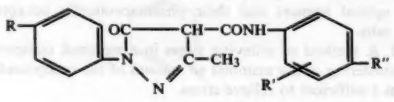
Gordon N. Walker, Morristown, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 885,722, Mar. 13, 1978, abandoned. This application Dec. 20, 1978, Ser. No. 971,478

Int. Cl.[2] A61K *31/555, 31/415;* C07F *3/06;* C07D *231/22*

U.S. Cl. 424—245 6 Claims

1. A compound and corresponding to the formula



wherein each of R, R′ and R″ is alkyl or alkoxy with up to 4 carbon atoms; fluoro, chloro, bromo or trifluoromethyl; or R and R′ are hydrogen; or an alkali metal, zinc or triethylammonium salt thereof.

5. An antiinflammatory or antiarthritic pharmaceutical composition comprising a correspondingly effective amount of a compound claimed in claim 1, together with a pharmaceutical excipient.

6. A method of treating inflammatory or arthritic conditions in mammals, which consists in administering to said mammals enterally, parenterally or topically a composition as claimed in claim 5.

4,207,318

NOVEL IMIDAZOBENZOXAZINES

David A. Rowlands, Cirencester, and John B. Taylor, Ampney Crucis Nr. Cirencester, both of England, assignors to Roussel Uclaf, Paris, France

Filed Nov. 7, 1978, Ser. No. 958,561

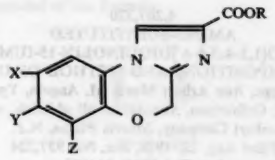
Claims priority, application United Kingdom, Nov. 18, 1977, 48178/77

The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.

Int. Cl.[2] A61K *31/535;* C07D *498/02*

U.S. Cl. 424—248.4 29 Claims

1. A compound of the formula



wherein X is selected from the group consisting of hydrogen, halogen and alkyl of 1 to 5 carbon atoms, R is selected from the group consisting of hydrogen, alkyl of 1 to 5 carbon atoms, alkali metal, alkaline earth metal, magnesium, aluminum and nitrogen bases, Y is selected from the group consisting of hydrogen and alkyl of 1 to 5 carbon atoms, Z is selected from the group consisting of hydrogen and alkoxy of 1 to 5 carbon atoms with the proviso that at least one but not more than 2 of X, Y and Z are hydrogen and their non-toxic, pharmaceutically acceptable acid addition salts.

13. An antiallergic composition comprising an anti-allergically effective amount of at least one compound of claim 1 and a pharmaceutical carrier.

4,207,319

THIENYL OR FURYL PHENYL O-HETERO AMINO ALKYL OXIMES AND USE THEREOF

Germaine Thuillier, Paris; Jacqueline Laforest, Vincennes, and Pierre Bessin, Chilly Mazarin, all of France, assignors to Albert Rolland S.A., Paris, France

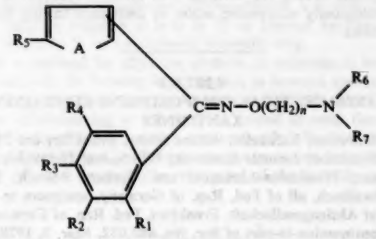
Continuation-in-part of Ser. No. 804,777, Jun. 8, 1977, abandoned, which is a division of Ser. No. 515,063, Oct. 15, 1974, Pat. No. 4,029,808. This application Apr. 14, 1978, Ser. No. 896,621

Claims priority, application France, Oct. 19, 1973, 73 37444

Int. Cl.[2] C07D *413/12, 405/12;* A61K *31/535, 31/40*

U.S. Cl. 424—248.51 5 Claims

1. An aromatic compound having the formula:



in which,

A in the heterocyclic group is selected from the group of O and S;

R_1, R_2, R_3 and R_4, which may be identical or different, are selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy;

R_5 is selected from the group consisting of hydrogen, lower alkyl and nitro;
n is an integer from 1 to 3 and
R_6 and R_7 together with the nitrogen atom to which they are attached form a morpholino, pyrrolidino, N-methyl piperazino or hexahydroazepino group and pharmaceutically acceptable acid addition salts of the amino group thereof, said compound being in the form of the E isomer of the oximino group, the Z isomer or mixture thereof.

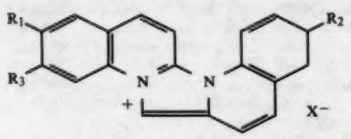
5. A composition useful for inducing coronary vasodilatory activity which comprises a therapeutically effective amount of a compound according to claim 1 and a physiologically acceptable excipient therefor.

4,207,320
AMINO-SUBSTITUTED IMIDAZO[1,2-A:3,4-A']DIQUINOLIN-15-IUM SALTS COMPOSITIONS AND METHOD OF USE

David B. Capps, Ann Arbor; Mario M. Angelo, Ypsilanti, and Townley P. Culbertson, Ann Arbor, all of Mich., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Aug. 28, 1978, Ser. No. 937,234
Int. Cl.[2] A61K *31/535*
U.S. Cl. 424—248.56 33 Claims

1. A compound having the formula I:



I

wherein
R_1 is hydrogen, lower alkyl, C_4–C_6 cycloalkyl, di(lower alkyl)amino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, methyl-1-pyrrolidinyl, methyl-1-piperidinyl, 4-morpholinyl or 2,2-dimethylhydrazino;
R_2 is hydrogen, lower alkyl, lower alkylamino, di(lower alkyl)amino, C_4–C_6 cycloalkylamino, lower alkoxy(lower alkyl)amino, 1-azetidinyl, 1-pyrrolidinyl, 1-piperidinyl, methyl-1-pyrrolidinyl, methyl-1-piperidinyl, hexahydro-1H-azepin-1-yl, 4-morpholinyl, benzylamino, N-methylbenzylamino or 2-phenylethylamino;
R_3 is hydrogen or methyl;
X is an anion;
with the proviso that at least one of R_1 and R_2 is other than hydrogen, lower alkyl or C_4–C_6 cycloalkyl; and with the further proviso that when R_2 is dimethylamino, at least one of R_1 and R_3 is other than hydrogen.

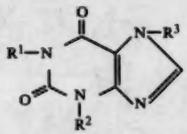
29. A method for treating fungal infections in mammals which comprises the administration of an effective amount of a compound having the formula I in claim 1 wherein X is a physiologically acceptable anion to mammals having fungal infections.

4,207,321
PHARMACEUTICAL COMPOSITIONS CONTAINING XANTHINES

Harald Furrer, Kelkheim; Alfons Söder, Frankfurt am Main-Schwanheim; Jaromir Komarek, Wiesbaden; Heinz-Joachim Hinze, Wiesbaden-Auringen, and Gerhard Münch, Bad-Schwalbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 883,052, Mar. 3, 1978, abandoned. This application Oct. 2, 1978, Ser. No. 947,508
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1977, 2714953
Int. Cl.[2] C07D *473/12*
U.S. Cl. 424—253 21 Claims

1. A blood-perfusion-promoting pharmaceutical composition comprising pharmacologically-acceptable excipient and, as a single essential active ingredient, an effective amount of a compound of the formula



(I)

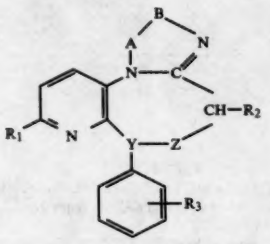
wherein
R^1 is —H or one of the meanings of R^2;
R^2 is alkenyl having from 4 to 8 carbon atoms or alkyl having from 1 to 12 carbon atoms; and
R^3 is one of the meanings of R^2; at least one of R^1, R^2 and R^3 being alkenyl.

4,207,322
6-ARYL-S-TRIAZOLO-(4,3-ALPHA)-PYRIDO-(2,3-F)-(1,4)-DIAZEPINES

Walter von Bebenburg, Buchschlag; Norbert Schulmeyer, Mörfelden, and Vladimir Jakovlev, Maintal, all of Fed. Rep. of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt, Fed. Rep. of Germany

Division of Ser. No. 735,894, Oct. 26, 1976, Pat. No. 4,110,455. This application Jul. 20, 1978, Ser. No. 926,327
Claims priority, application Austria, Nov. 4, 1975, 8372/75
Int. Cl.[2] A61K *31/44*; C07D *471/14*
U.S. Cl. 424—256 16 Claims

1. A 6-phenyl-s-triazolo-(4,3-a)-pyrido-(2,3-f)-(1,4)-diazepine compound of the formula:



I

wherein R_1 is hydrogen or a halogen atom,
R_2 is hydrogen or an alkyl group with 1 to 4 carbon atoms,
R_3 is hydrogen, or a halogen
the structural part A-B is the group, —CH=N—,
and Y-Z is the group >C=N— or >C=N(→O), their optical isomers and their pharmaceutically acceptable salts.

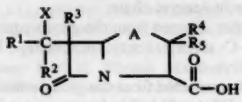
13. A method of relieving stress in a mammal comprising administering to the mammal an amount of the compounds of claim 1 sufficient to relieve stress.

4,207,323
6-SUBSTITUTED METHYL PENICILLINS, DERIVATIVES AND ANALOGUES THEREOF

Thomas R. Beattie, North Plainfield; Frank P. Dininno, Old Bridge, and Burton G. Christensen, Metuchen, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 808,940, Jun. 22, 1977, abandoned, which is a continuation of Ser. No. 634,083, Nov. 21, 1975, abandoned. This application May 1, 1978, Ser. No. 901,867
Int. Cl.[2] A61K *31/38*; C07D *499/00*
U.S. Cl. 424—270 3 Claims

1. A compound of the structural formula:



and the non-toxic pharmaceutically acceptable salts thereof wherein:

A is S, SO, or NR^7;

R^7 is hydrogen, C_{1-6} lower alkyl or C_{1-6} lower alkanoyl;

R^4 and R^5 are independently selected from hydrogen and methyl;

R_3 is hydrogen, methoxyl, halo or methylthio;

X is OH, =O, SH, =NH, NH_2 or NHR^7; and R^1 and R^2 are independently selected from hydrogen, substituted and unsubstituted C_{1-6} lower alkyl, benzyl, phenylethyl, phenylpropyl and thienylmethyl; wherein the ring or chain substituent relative to R^1 and R^2 are selected from carbonyl, amino and hydroxyl; with the proviso that when X is =O or NH, the substituent R^2 is absent.

4,207,324

1,2-DI-SUBSTITUTED-4-HALOIMIDAZOLE-5-ACETIC ACID DERIVATIVES AND THEIR USE

Koichi Matsumura; Naoto Hashimoto, and Yoshiyasu Furukawa, all of Osaka, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

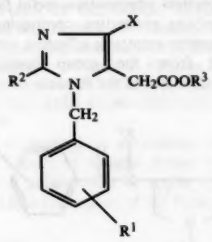
Filed May 7, 1979, Ser. No. 36,645

Claims priority, application Japan, May 15, 1978, 53-57912

Int. Cl.[2] A61K *31/415;* **C07D** *233/68*

U.S. Cl. 424—273 R **13 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen, nitro or amino;

R^2 is a phenyl, furyl or thienyl group unsubstituted or substituted by halogen, lower alkyl, lower alkoxy or di-lower-alkylamino;

R^3 is hydrogen or lower alkyl; and

X is halogen;

or a pharmaceutically acceptable salt thereof.

13. A method of treating a patient to alleviate edema which comprises administering to said patient a compound of claim 1, 3, 4, 5, 6, 7, 10 or 11 in an amount sufficient to alleviate said edema.

4,207,325

4-SUBSTITUTED PYRAZOLES

Eike Möller, Wuppertal, Fed. Rep. of Germany; Karl-August Meng, deceased, late of Wuppertal, Fed. Rep. of Germany (by Ilse H. F. Meng, heir); Egbert Wehinger, Neviges, Fed. Rep. of Germany; Harald Horstmann, Wuppertal, Fed. Rep. of Germany, and Friedel Seuter, Neviges, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 693,970, Jun. 8, 1976, Pat. No. 4,099,011.

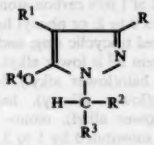
This application Jan. 17, 1978, Ser. No. 870,219

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1975, 2526467

Int. Cl.[2] A61K *31/415;* **C07D** *231/20*

U.S. Cl. 424—273 P **66 Claims**

1. A compound of the formula



wherein

R is hydrogen or lower alkyl;

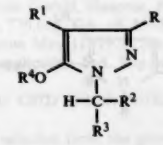
R^1 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro and cyano;

R^2 is lower alkyl;

R^3 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, mono- or dialkylamino of 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, carboxamido, sulphonamido and SO_n-alkyl of 1 to 4 carbon atoms in the alkyl moiety and wherein n is 0 to 2, or by 1 or 2 cycloalkyl or cycloalkenyl moieties of 5 to 7 carbon atoms each; or phenyl having fused thereto a 5- to 7-membered isocyclic ring; and

R^4 is R^5CO wherein R^5 is lower alkyl, cycloalkyl of 5 to 7 carbon atoms, halo(lower alkyl), lower alkoxy, lower alkylthio, halo(lower alkoxy), halo(lower alkylthio), lower alkoxy(lower alkyl), mono- or di-(lower alkylamino), phenyl substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, carboxamido, suphonamido, SO_n-(lower alkyl) wherein n is 0 to 2, and SO_nCF_3 wherein n is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring.

45. A method for effecting diuresis or saluresis in humans and animals, for treating hypertension in humans and animals or for treating thromboses in humans and animals which comprises administering to a human or animal in need thereof a diuretically effective amount, a saluretically effective amount, an antihypertensively effective amount or an anti-thrombolytically effective amount of a compound of the formula



wherein

R is hydrogen or lower alkyl;

R^1 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 or 2 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro and cyano;

R^2 is lower alkyl;

R^3 is aryl of 6 to 10 carbon atoms unsubstituted or substituted by 1 to 3 of the same or different substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, mono- or di-alkylamino of 1 to 4 carbon atoms in each alkyl moiety, nitro, cyano, carboxamido, sulphonamido and SO_n—alkyl of 1 to 4 carbon atoms in the alkyl moiety and wherein n is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring; and

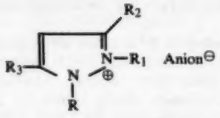
R^4 is R^5CO wherein R^5 is lower alkyl, cycloalkyl of 5 to 7 carbon atoms, halo(lower alkyl), lower alkoxy, lower alkylthio, halo(lower alkoxy), halo(lower alkylthio), lower alkoxy(lower alkyl), mono- or di-(lower alkylamino), phenyl substituted by 1 to 3 substituents selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, halo, trifluoromethyl, trifluoromethoxy, nitro, cyano, carboxamido, sulphonamido, SO_n—(lower alkyl) wherein n is 0 to 2, and SO_nCF_3 wherein n is 0 to 2; or phenyl having fused thereto a 5- to 7-membered isocyclic ring; in combination with a pharmaceutically acceptable carrier.

4,207,326
ANTIMICROBIAL QUATERNARY PYRAZOLE DERIVATIVES

Carl Richter, and Georg Feth, both of Schaffhausen, Switzerland, assignors to Cilag-Chemie A.G., Schaffhausen, Switzerland

Filed May 21, 1979, Ser. No. 41,130
Int. Cl.[2] C07D *231/12;* **A61K** *31/415;* **A01N** *9/22*
U.S. Cl. 424—273 P **35 Claims**

1. A quaternary pyrazole having the formula:



wherein:

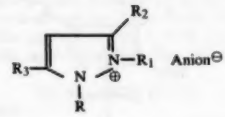
R is an alkyl having from 10 to 18 carbons with at least 10 carbons in its longest chain;

R_1 is a member selected from the group consisting of lower alkyl, C_3–C_5 alkenyl, benzyl, nitrobenzyl, halobenzyl and dihalobenzyl;

R_2 is a member selected from the group consisting of hydrogen and methyl; and

R_3 is a member selected from the group consisting of hydrogen and methyl.

27. A method of combatting microorganisms which comprises contacting said microorganisms with an effective antimicrobial amount of a quaternary pyrazole having the formula:



wherein:

R is an alkyl having from 10 to 18 carbons with at least 10 carbons in its longest chain;

R_1 is a member selected from the group consisting of lower alkyl, C_3–C_5 alkenyl, benzyl, nitrobenzyl, halobenzyl and dihalobenzyl;

R_2 is a member selected from the group consisting of hydrogen and methyl; and

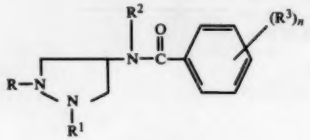
R_3 is a member selected from the group consisting of hydrogen and methyl.

4,207,327
N-(4-PYRAZOLIDINYL)BENZAMIDES AND THEIR AMINO PRECURSORS

Carl D. Lunsford, Richmond, and Albert D. Cale, Jr., Mechanicsville, both of Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 930,125, Aug. 1, 1978, abandoned, which is a continuation-in-part of Ser. No. 900,369, Apr. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 826,031, Aug. 19, 1977, abandoned. This application May 22, 1979, Ser. No. 41,461
Int. Cl.[2] A61K *31/415;* **C07D** *231/04*
U.S. Cl. 424—273 P **25 Claims**

1. A compound selected from the group consisting of N-(4-pyrazolidinyl)benzamides having the formula:



wherein;

R is lower alkyl, lower cycloalkyl or phenyllower alkyl,

R^1 is lower alkyl, lower cycloalkyl or phenyllower alkyl,

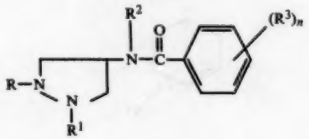
R^2 is hydrogen, lower alkyl or phenyl,

R^3 is hydroxy, cyano, nitro, amino, fluoro, chloro, bromo, trifluoromethyl, lower alkyl, lower alkoxy, sulfamoyl or acetamido and R^3 can be the same radical or different radicals, and

n is an integer from zero to three inclusive, and

pharmaceutically acceptable acid addition salts thereof.

8. A pharmaceutical composition useful for its anti-emetic and gastric emptying properties, comprising (a) an emetic inhibiting and gastric emptying effective amount of a compound selected from the group consisting of N-(4-pyrazolidinyl)benzamides of the formula:



wherein;

R is lower alkyl, lower cycloalkyl or phenyllower alkyl,

R^1 is lower alkyl, lower cycloalkyl or phenyllower alkyl,

R^2 is hydrogen, lower alkyl or phenyl,

R^3 is hydroxy, cyano, nitro, amino, fluoro, chloro, bromo, trifluoromethyl, lower alkyl, lower alkoxy, sulfamoyl or acetamido and R^3 can be the same radical or different radicals, and

n is an integer from zero to three inclusive, and pharmaceutically acceptable acid addition salts thereof, and

(b) a pharmaceutically acceptable carrier therefor.

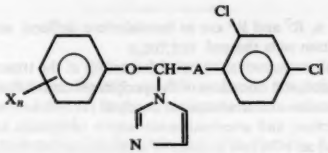
4,207,328

1-PHENOXY-2-(2,4-DICHLOROPHENYL)-1-IMIDAZOL-1-YL-ETHAN-2-ONES AND -OLS AND ANTIMYCOTIC AND FUNGICIDAL USE

Wolfgang Krämer; Karl H. Büchel; Manfred Plempel, all of Wuppertal; Wilhelm Brandes, Leichlingen, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 27, 1978, Ser. No. 872,987
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1977, 2705676; Feb. 11, 1977, 2705677
Int. Cl.[2] A61K *31/415;* C07D *233/60*
U.S. Cl. 424—273 R 20 Claims

1. A 2,4-Dichlorophenyl-imidazolyl-ethanone or -ol of the general formula



in which

A is a keto group or a CH(OH) group,

X is halogen, straight-chain or branched alkyl with 1 to 4 carbon atoms or phenyl optionally substituted by halogen, preferably chlorine,

and

n is an integer from 0 to 3, or an acid-addition salt thereof.

10. A method of combating mycoses in warm-blooded animals which comprises administering to the said animals an antimycatically effective amount of a compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

16. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of a compound or salt according to claim 1.

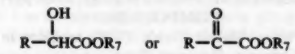
4,207,329

DERIVATIVES OF GLYCOLIC AND GLYOXYLIC ACID AS INHIBITORS OF GLYCOLIC ACID OXIDASE

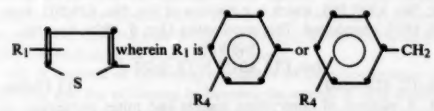
Haydn W. R. Williams, Dollard des Ormeaux, Canada; Edward J. Cragoe, Jr., Lansdale, and Clarence S. Rooney, Worcester, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 11, 1978, Ser. No. 950,753
Int. Cl.[2] A61K *31/40;* C07C *149/40*
U.S. Cl. 424—274 3 Claims

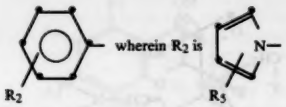
1. A method of treating or preventing the formation of calcium oxalate kidney or bladder stones which comprises administering to a patient with or prone to this disease an effective amount of a compound of the formula:



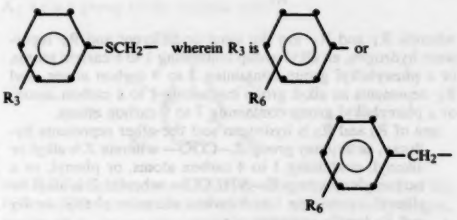
wherein R is selected from the group consisting of



and R_4 is hydrogen, halogen or C_{1-4} loweralkyl,



and R_5 is hydrogen or C_1-C_4 loweralkyl, and



and R_6 is hydrogen, halo or C_1-C_4 loweralkyl;

R_7 is H or straight or branched chain loweralkyl of from 1–6 carbon atoms, or

where R_8 and R_9 are H or loweralkyl from 1–4 carbon atoms, or the pharmaceutically acceptable salt thereof.

4,207,330

METHOD FOR TREATING HYPERGLYCEMIA IN MAMMALS USING ARYLAMINO BENZOIC ACIDS

Eugene R. Wagner, Carmel, and Roger D. McDermott, Noblesville, both of Ind., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 922,002, Jul. 3, 1978, Pat. No. 4,143,151. This application Feb. 22, 1979, Ser. No. 13,845
The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.
Int. Cl.[2] A61K *31/38*
U.S. Cl. 424—275 1 Claim

1. A method for treating hyperglycemia in a mammal which comprises administering internally to said mammal an effective hypoglycemic amount of the compound 4-(((5-bromo-2-thienyl)methyl)amino)benzoic acid or pharmaceutically-acceptable salt thereof.

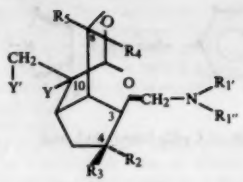
4,207,331

2,9-DIOXATRICYCLO[4,3,1,$0^{3,7}$]DECANE DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS THEREOF

Peter W. Thies, Hanover; Akiji Asai, Wennigsen, and Samuel David, Hanover, all of Fed. Rep. of Germany, assignors to Kali Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Division of Ser. No. 770,055, Feb. 18, 1977, Pat. No. 4,163,055.
This application May 11, 1978, Ser. No. 904,742
Claims priority, application Fed. Rep. of Germany, Feb. 21, 1976, 2607106
Int. Cl.[2] C07D *319/08;* A61K *31/335*
U.S. Cl. 424—278 10 Claims

1. A compound selected from the group of 2,9-dioxatricyclo[4,3,1,$0^{3,7}$] decanes of formula I



(I)

wherein $R_{1'}$ and $R_{1''}$ are the same or different and $R_{1'}$ represents hydrogen, an alkyl group containing 1 to 6 carbon atoms, or a phenylalkyl group containing 7 to 9 carbon atoms, and $R_{1''}$ represents an alkyl group containing 1 to 6 carbon atoms, or a phenylalkyl group containing 7 to 9 carbon atoms;

one of R_2 and R_3 is hydrogen and the other represents hydroxy, an acyloxy group Z—COO— wherein Z is alkyl or alkenyl, containing 1 to 4 carbon atoms, or phenyl, or a carbamyloxy group Z—NHCOO— wherein Z is alkyl or alkenyl, containing 1 to 4 carbon atoms or phenyl, or R_2 and R_3 jointly represent oxygen;

one of R_4 and R_5 is hydrogen and the other represents an alkoxy group containing 1 to 6 carbon atoms, or an aralkyloxy group containing 7 to 9 carbon atoms;

and y and y' each represent hydrogen or jointly form a bond; and pharmaceutically acceptable acid addition salts thereof.

6. A pharmaceutical composition comprising an inert carrier material and a sedatively or soporifically effective amount of a compound as defined in claim 1.

4,207,332

PROSTAGLANDIN I_2 ANALOGUES

Masaki Hayashi, Takatsuki; Yoshinobu Arai, Toyonaka; Katsuichi Shimoji; Yoshitaka Konishi, both of Takatsuki; Shuichi Ohuchida, Nishinomiya, and Shinsuke Hashimoto, Nishinomiya, all of Japan, assignors to Ono Pharmaceutical Co., Ltd., Osaka, Japan

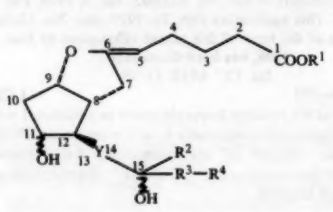
Filed Sep. 20, 1978, Ser. No. 944,164

Claims priority, application Japan, Sep. 22, 1977, 52-113291

Int. Cl.[2] C07D *307/93;* **A61K** *31/34*

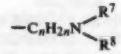
U.S. Cl. 424—285 **21 Claims**

1. A prostaglandin analogue of the general formula:

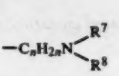


II

wherein Y represents ethylene or trans-vinylene, R^1 represents a group $-C_mH_{2m}COOR^5$, $-C_nH_{2n}OR^6$ or

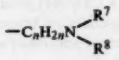


in which R^5 represents a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, R^6 represents a hydrogen atom or a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, R^7 and R^8, which may be the same or different, each represents a straight- or branched-chain alkyl group containing from 1 to 4 carbon atoms, m represents an integer of from 1 to 12 and n represents an integer of from 2 to 12; R^2 represents a hydrogen atom or a methyl or ethyl group; R^3 represents a single bond or a straight- or branched-chain alkylene group containing from 1 to 4 carbon atoms; R^4 represents a hydrogen atom, a straight- or branched-chain alkyl group containing from 1 to 8 carbon atoms, a cycloalkyl group containing from 4 to 7 carbon atoms in the ring, which may be unsubstituted or substituted by at least one straight- or branched-chain alkyl group containing from 1 to 8 carbon atoms, or represents a phenyl or phenoxy group which may be unsubstituted or substituted by at least one chlorine atom, trifluoromethyl group or alkyl group containing from 1 to 3 carbon atoms; the wavy line attached to the carbon atoms in positions 11 and 15 represents α- or β-configuration or mixtures thereof; and the double bond between C_5–C_6 is Z, and, when R^1 represents a group



in which n, R^7 and R^8 are as hereinbefore defined, non-toxic acid addition salts thereof.

21. A pharmaceutical composition useful in the treatment of hypertension and disorders of the peripheral circulation and in the prevention and treatment of cerebral thrombosis, myocardial infarction, and arteriosclerosis which comprises as active ingredient, an effective amount of a prostaglandin analogue as claimed in claim 1 or, when R^1 represents a group



in which n, R^7 and R^8 are as defined in claim 1, a non-toxic acid addition salt thereof, in association with a pharmaceutical carrier or coating.

4,207,333

N-CARBOMETHOXY-N'-[2'-NITRO-4'-PROPYLOXY-PHENYL]-S-METHYL-ISOTHIOUREA AND METHOD OF USE THEREOF

Mohammed M. Nafissi-Varchei, North Caldwell, N.J., assignor to Schering Corporation, Kenilworth, N.J.

Continuation-in-part of Ser. No. 902,146, May 2, 1978, abandoned. This application Nov. 15, 1978, Ser. No. 960,902

The portion of the term of this patent subsequent to May 3, 1994, has been disclaimed.

Int. Cl.[2] A61K *31/27*

U.S. Cl. 424—300 **5 Claims**

2. A method of treating helminth infection in ruminants which comprises administering to an infected animal 5–50 mg/kg per day of the compound of claim 1.

4,207,334

ACYLFORMAMIDINE INSECTICIDAL AND MITICIDAL COMPOUNDS

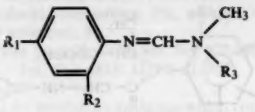
Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 834,256, Sep. 12, 1977, Pat. No. 4,130,662, which is a division of Ser. No. 666,520, Mar. 12, 1976, Pat. No. 4,056,570, which is a division of Ser. No. 575,313, May 7, 1975, Pat. No. 3,962,305, which is a division of Ser. No. 439,507, Feb. 4, 1974, abandoned. This application Oct. 5, 1978, Ser. No. 948,928

Int. Cl.[2] A01N *9/12, 9/20*

U.S. Cl. 424—300 **11 Claims**

1. A method of controlling insects and mites consisting of applying thereto or to the habitat thereof an insecticidal or miticidal effective amount of compounds having the formula:



wherein R_1 and R_2 are independently methyl or halogen; R_3 is

and R_4 is alkylthio.

4,207,335

INDAN-1,3-DIONES

Derek R. Buckle, Redhill, and Harry Smith, Maplehurst Nr. Horsham, both of England, assignors to Beecham Group Limited, England

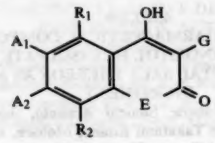
Division of Ser. No. 780,246, Mar. 22, 1976, Pat. No. 4,136,192, which is a continuation-in-part of Ser. No. 722,868, Sep. 13, 1976, abandoned. This application Dec. 4, 1978, Ser. No. 963,761

Claims priority, application United Kingdom, Sep. 23, 1975, 39041/75; Sep. 23, 1975, 39042/75; Feb. 4, 1976, 4321/76; May 22, 1976, 21276/76; May 22, 1976, 21277/76; Jun. 12, 1976, 24450/76

Int. Cl.[2] **C07C** *79/36, 121/52;* **A61K** *31/275, 31/12*

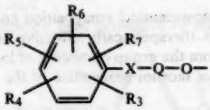
U.S. Cl. 424—304 **98 Claims**

1. A compound of the formula (I):



(I)

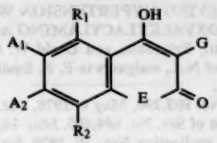
or a pharmaceutically acceptable salt thereof wherein one of A_1 or A_2 is a group of the formula (II)



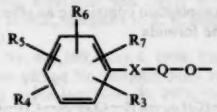
(II)

and R_1, R_2 and the one of A_1, or A_2 which is not a group of the formula (II) are the same or different and each is hydrogen, lower alkyl, lower alkoxy, lower alkenyl or lower alkynyl; provided that at least one of R_1, R_2, A_1 and A_2 is hydrogen, E is a covalent bond; G is nitro or cyano; X is oxygen; and Q is alkylene of 1 to 8 carbon atoms, 1 methylene group within the group Q, other than a methylene covalently bound to an ether oxygen, being unsubstituted or substituted by hydroxyl, and R_3, R_4, R_5, R_6 and R_7 are each hydrogen, halogen, nitro, hydroxy, cyano, carboxyl, amino, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxy carbonyl, lower alkanoyl, lower alkanoyloxy, mono- or di-lower alkyl amino, mono- or di-lower alkanoyl amino, phenyl, lower alkylphenyl, phenoxycarbonyl, or benzyloxycarbonyl.

66. A method of inhibiting mediators of allergic response in humans and for inhibiting in humans the action of said mediators which comprises administering to a human in need thereof an effective amount of a compound of the formula (I):



or a pharmaceutically acceptable salt thereof wherein one of A_1 A_2 is a group of the formula (II):



and R_1, R_2 and the one of A_1 or A_2 which is not a group of the formula (II) are the same or different and each is hydrogen, lower alkyl, lower alkoxy, lower alkenyl or lower alkynyl; provided that at least one of R_1, R_2, A_1 and A_2 is hydrogen, E is a covalent bond; G is nitro or cyano; X is oxygen; and Q is alkylene of 1 to 8 carbon atoms, 1 methylene group within the group Q, other than a methylene covalently bound to an ether oxygen, being unsubstituted or substituted by hydroxyl, and R_3, R_4, R_5, R_6 and R_7 are each hydrogen, halogen, nitro, hydroxy, cyano, carboxyl, amino, lower alkyl, lower alkenyl, lower alkynyl, lower alkoxy, lower alkoxy carbonyl, lower alkanoyl, lower alkanoyloxy, mono- or di-lower alkyl amino, mono- or di-lower alkanoyl amino, phenyl, lower alkylphenyl, phenoxycarbonyl, or benzyloxycarbonyl, in combination with a pharmaceutically acceptable carrier.

4,207,336

RELIEVING HYPERTENSION WITH CARBOXYALKYLACYLAMINO ACIDS

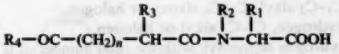
Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 903,290, May 4, 1978, Pat. No. 4,153,725, which is a division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application Nov. 20, 1978, Ser. No. 962,534

Int. Cl.[2] **A61K** *31/24, 31/205, 31/195*

U.S. Cl. 424—309 **14 Claims**

1. A method for relieving angiotensin related hypertension in mammalian species suffering therefrom which comprises administering a composition containing an effective amount of a compound of the formula



and physiologically acceptable basic salts thereof, wherein

R_1 is hydrogen, lower alkyl, phenyl-lower alkylene, hydroxy-lower alkylene, hydroxyphenyl-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene, or carbamoyl-lower alkylene;

R_2 is hydrogen or lower alkyl;

R_3 is lower alkyl;

R_4 is hydroxy or lower alkoxy; and

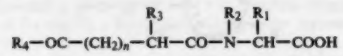
n is 1 or 2.

4,207,337
RELIEVING HYPERTENSION WITH CARBOXYALKYLACYLAMINO ACIDS

Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 903,290, May 4, 1978, Pat. No. 4,153,725, which is a division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application Nov. 20, 1978, Ser. No. 962,535
Int. Cl.[2] A61K *31/24, 31/195, 31/205*
U.S. Cl. 424—309 9 Claims

1. A method for relieving angiotensin related hypertension in mammalian species suffering therefrom which comprises administering a composition containing an effective amount of a compound of the formula



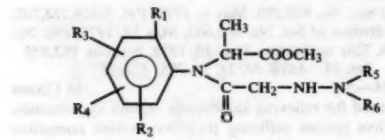
and physiologically acceptable basic salts thereof,
wherein
R_1 is mercapto-lower alkylene or lower alkylmercapto-lower alkylene;
R_2 is hydrogen or lower alkyl;
R_3 is phenyl-lower alkylene;
R_4 is hydroxy or lower alkoxy; and
n is 1 or 2.

4,207,338
MICROBICIDAL COMPOSITION

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany; Walter Kunz, Oberwil, and Adolf Hubele, Magden, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

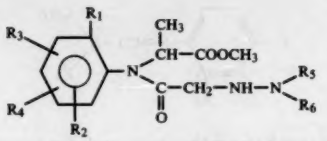
Filed May 11, 1979, Ser. No. 39,011
Claims priority, application Switzerland, May 19, 1978, 5461/78
Int. Cl.[2] A61K *31/24;* C07C *101/447*
U.S. Cl. 424—309 10 Claims

1. A compound of the formula, and salts thereof which are tolerated by plants,



wherein
R_1 is C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen,
R_2 is C_1–C_3 alkyl, C_1–C_4 alkoxy or halogen,
R_3 is hydrogen, C_1–C_3 alkyl or halogen,
R_4 is hydrogen or methyl, with the total number of C atoms of the substituents R_1, R_2, R_3 and R_4 in the phenyl ring not exceeding 6,
R_5 is C_1–C_5 alkyl which is unsubstituted or substituted by halogen, or it is phenyl which is unsubstituted or substituted by methyl, nitro and/or halogen, or it is the benzyl group, and
R_6 is hydrogen or C_1–C_5 alkyl.

7. A composition for combating fungi, which composition contains, as at least one active ingredient, an effective amount of a compound of the formula, or one of its salts tolerated by plants.



wherein
R_1 is C_1–C_4 alkyl, C_1–C_4 alkoxy or halogen,
R_2 is C_1–C_3 alkyl, C_1–C_4 alkoxy or halogen,
R_3 is hydrogen, C_1–C_3 alkyl or halogen,
R_4 is hydrogen or methyl, with the total number of C atoms of the substituents R_1, R_2, R_3 and R_4 in the phenyl ring not exceeding 6,
R_5 is C_1–C_5 alkyl which is unsubstituted or substituted by halogen, or it is phenyl which is unsubstituted or substituted by methyl, nitro and/or halogen, or it is the benzyl group, and
R_6 is hydrogen or C_1–C_5 alkyl,
together with a suitable carrier therefor.

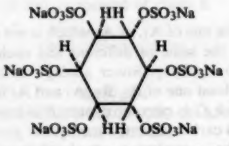
10. A process for combating phytopathogenic fungi or preventing plants from their attack, which process involves the application of an effective amount of a compound of claim 1.

4,207,339
ANTI-ULCER PHARMACEUTICAL COMPOSITION CONTAINING INOSITOL HEXASULFATE OR AN ALKALINE METAL SALT THEREOF AS ACTIVE INGREDIENT

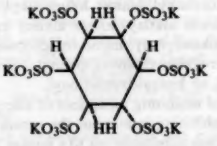
Zen-ichi Henmi, Mobara; Shuichi Arimoto, Joshin; Akira Kotaki, Tokyo, and Takafumi Kitano, Mobara, all of Japan, assignors to Mitsui Toatsu Chemicals Incorporated, Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,204
Int. Cl.[2] A61K *31/185*
U.S. Cl. 424—315 2 Claims

1. An anti-ulcer pharmaceutical composition comprising as an active ingredient a therapeutically effective amount of a compound selected from the group consisting of inositol hexasulfate, a sodium salt of inositol hexasulfate of the formula



and a potassium salt of inositol hexasulfate of the formula



and a pharmaceutically acceptable carrier.

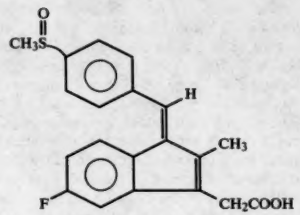
4,207,340
ANALGESIC POTENTIATION

Joseph F. Gardocki, Doylestown, Pa., assignor to McNeilab, Inc., Fort Washington, Pa.

Filed Dec. 18, 1978, Ser. No. 970,685
Int. Cl.[2] A61K *31/19, 31/165*
U.S. Cl. 424—317 8 Claims

5. A method for producing analgesia which comprises orally administering to a subject suffering from pain

(1) as primary active agent from about 0.1 to 1.7 mg/kg of body weight of a (Z)-5-fluoro-2-methyl-1-{[4-(methylsulfinyl) phenyl]methylene}-1H-indene-3-acetic acid compound, said compound selected from (a) (Z)-5-fluoro-2-methyl-1-{[4-(methylsulfinyl) phenyl]methylene}-1H-indene-3-acetic acid having the formula



and (b) a non-toxic therapeutically acceptable salt thereof, and

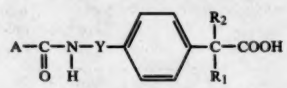
(2) as potentiating agent from about 0.1 to 7.5 mg/kg of body weight of acetaminophen.

4,207,341
HYPOGLYCAEMICALLY AND HYPOLIPIDAEMICALLY ACTIVE DERIVATIVES OF PHENYLACETIC ACID

Manfred Hübner, Ludwigshafen am Rhein; Hans Kühnle, Mannheim-Neuostheim; Ernst-Christian Witte, Mannheim; Ruth Heerdt, Mannheim-Feudenheim; Rudi Weyer, Frankfurt, and Volker Hitzel, Lorsbach, all of Fed. Rep. of Germany, assignors to Boehringer-Mannheim GmbH, Mannheim, Fed. Rep. of Germany

Filed Jul. 1, 1976, Ser. No. 701,717
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1975, 2532420
Int. Cl.[2] A61K *31/195;* C07C *101/42, 101/44*
U.S. Cl. 424—319 11 Claims

1. A phenylacetic acid derivative of the formula



wherein

A is an aryl radical substituted by halogen, trifluoromethyl, alkyl, alkoxy, alkenyloxy, alkoxyalkoxy, alkyl-substituted amino or aryloxy,

Y is a valency bond or an optionally branched alkylene radical containing up to 3 carbon atoms, and

R_1 and R_2 each independently is hydrogen or a lower alkyl radical,

or a physiologically compatible salt or ester thereof.

9. A hypoglycaemically or hypolipidaemically active composition of matter comprising a hypoglycaemically or hypolipidaemically effective amount of a compound according to claim 1 or a physiologically compatible salt or ester thereof in admixture with a physiologically acceptable diluent.

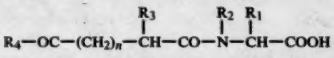
10. A method of reducing the sugar or lipid level in the blood which comprises administering to a patient a hypoglycaemically or hypolipidaemically effective amount of a compound according to claim 1 or a phsiologically compatible salt or ester thereof.

4,207,342
RELIEVING HYPERTENSION WITH CARBOXYALKYLACYLAMINO ACIDS

Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 903,290, May 4, 1978, Pat. No. 4,153,725, which is a division of Ser. No. 684,605, May 10, 1976, Pat. No. 4,105,789. This application Nov. 20, 1978, Ser. No. 962,263
Int. Cl.[2] A61K *31/195, 31/205*
U.S. Cl. 424—319 16 Claims

1. A method for relieving angiotensin related hypertension in mammalian species suffering therefrom which comprises administering a composition containing an effective amount of a compound of the formula



and physiologically acceptable basic salts thereof, wherein

R_1 is hydrogen, lower alkyl, phenyl-lower alkylene, hydroxy-lower alkylene, hydroxyphenyl-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene, or carbamoyl-lower alkylene;

R_2 is hydrogen or lower alkyl;

R_3 is lower alkyl or phenyl-lower alkylene;

R_4 is hydroxyamino; and

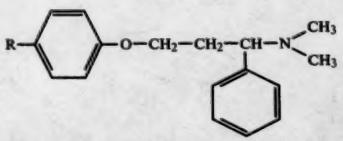
n is 1 or 2.

4,207,343
1-PHENYL-3-(SUBSTITUTED PHENOXY)PROPYLAMINES

Edward R. Lavagnino; Lawrence J. McShane, both of Indianapolis, and Bryan B. Molloy, North Salem, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1978, Ser. No. 917,819
Int. Cl.[2] A01N *9/20, 9/24;* C07C *93/06*
U.S. Cl. 424—330 4 Claims

1. A compound of the formula:



wherein R is CH_3 or CF_3 and pharmaceutically-acceptable acid addition salts thereof.

4. A pharmaceutical composition in unit dosage form, useful as an antidepressant agent, consisting per dosage unit of a pharmaceutical carrier and an amount within the range 1–50 mg. of N,N-dimethyl-3-(p-tolyloxy)-1-phenylpropylamine.

4,207,344

PROCESSES FOR PROTECTING PROTEIC FOODSTUFFS AGAINST SPOILAGE

Vincente P. Cerrillo, Av. Emperadores No. 132, 13 Mexico City, Mexico

Continuation-in-part of Ser. No. 785,679, Apr. 7, 1977, abandoned, which is a continuation of Ser. No. 705,102, Jun. 14, 1975, abandoned. This application Jul. 14, 1978, Ser. No. 924,648

Int. Cl.[2] A23B *4/00, 4/14*

U.S. Cl. 426—7 **18 Claims**

1. A process for preserving and then restoring to a usable state a foodstuff which is an animal or animal part containing protein and animal fat formed in vivo, said process comprising the steps of: immersing said foodstuff in a stabilizing liquid comprising a proteolytic enzyme in an amount effective to hydrolyze the intercellular substances of said foodstuff without enzymolysis of the foodstuff cells, a buffer for adjusting the stabilizing liquid to a pH of $\leqq 5$ or $\geqq 9$ at which the enzyme is viable and autolysis of the foodstuff cells is inhibited, and an effective amount of edible antioxidant for retarding oxidation of fatty constituents of the foodstuff, said foodstuff being immersed in said stabilizing liquid for a time sufficient to effect the hydrolysis of said intercellular structures; and restoring said foodstuff to a usable stage by sequentially: rapidly reversing the pH of the foodstuff in a hypotonic solution to destroy microorganisms present in said foodstuff; immersing the foodstuff in a hypertonic solution having a pH in the range of 5 to 7 to dehydrate the foodstuff cells and thereby eliminate the hypotonic solution from the foodstuff; and rehydrating the foodstuff and replacing ions lost during prior processing steps by immersing the foodstuff in an isotonic solution to thereby restore said foodstuff to a condition approaching that existing prior to the immersion of the foodstuff in the stabilizing liquid, all of the aforesaid steps being carried out at a not higher than ambient temperature.

4,207,345

ABBREVIATED BREWING PROCESS

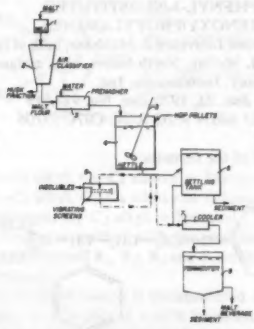
Joris E. A. Van Gheluwe, Longueuil; Zoltan Valyi, Westmount; Finn B. Knudsen, Farnham, and Miroslav Dadic, Montreal, all of Canada, assignors to The Molson Companies Limited, Toronto, Canada

Filed Mar. 17, 1978, Ser. No. 887,507

Claims priority, application Canada, Dec. 16, 1977, 293257

Int. Cl.[2] C12C *5/00*; A23L *1/00*

U.S. Cl. 426—11 **9 Claims**



1. A process for brewing a malt beverage comprising the steps of preparing a malt flour; subjecting said malt flour to cyclone-type air classification to yield a malt flour fraction having a high starch content and a low polyphenol content, and a malt flour fraction having a low starch content; mixing said high starch fraction with water to form a mash; heating said mash to form wort; boiling said wort; cooling said wort and fermenting the wort with yeast to yield the malt beverage.

4,207,346

PROCESS FOR MAKING HIGH DENSITY BREAD FOR USE IN A STUFFING MIX

Ronald P. Wauters, Dover, Del.; Stuart A. Cochran, Monticello, Ind., and Ralph E. Kenyon, Dover, Del., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 23, 1978, Ser. No. 889,472

Int. Cl.[2] A21D *13/00*

U.S. Cl. 426—19 **25 Claims**

1. A process for preparing bread crumbs or cubes having a high density, a relatively strong cell structure and suitable for use in a stuffing mix, comprising the steps of: mixing a yeast containing bread dough to a fully developed state, resting said fully developed dough, dividing said dough, and then baking said dough at an initial temperature which is sufficiently high and for a period of time effective to kill the yeast within said dough while additionally preventing substantial rising of the dough during said baking, thereafter continuing the baking until the bread dough is fully baked, thereby producing a baked bread having a density within the range of about 17 to 36 lbs/cubic foot, said process being carried out with a proofing step within the range of no proofing step to a minimal proofing step prior to the baking of the dough, staling and dividing the baked bread into crumbs or cubes which are suitable for use in a stuffing mix and do not form a pasty mass upon hydration and cooking.

4,207,347

FAT BASED PRESERVATIVE COATING AND METHOD FOR PRESERVING FOODS

John J. D'Atri, Zephyr Cove, Nev.; Ronald Swidler, Palo Alto, Calif.; Judith J. Colwell, Menlo Park, Calif., and Thomas R. Parks, Sunnyvale, Calif., assignors to Eterna-Pak, San Rafael, Calif.

Filed Aug. 23, 1978, Ser. No. 935,910

Int. Cl.[2] A23B *4/10, 7/16*

U.S. Cl. 426—92 **10 Claims**

1. A composition of matter for coating and preserving food consisting essentially of a mixture of

(a) lard

(b) a second fat consisting essentially of tallow or of partially hydrogenated lard, and

(c) a wetting agent to promote adhesion between the coating and the food said wetting agent comprising not more than 1% by weight of said mixture,

the ratio of (a) to (b) being between approximately 30:70 and 50:50 and said mixture having the characteristic of forming an effective preservative coating at a temperature of approximately 85° F. (29.4° C.) when applied to food having a temperature below said coating temperature.

4,207,348

FOOD ITEM AND METHOD OF PREPARATION

Barry L. Vermilyea, Brooklyn Park; Fred W. Crossen, Jr., and Douglas D. Mohar, both of Maple Grove, all of Minn., assignors to International Multifoods Corporation, Minneapolis, Minn.

Filed Dec. 21, 1978, Ser. No. 971,733

Int. Cl.[2] B65B *25/22*

U.S. Cl. 426—95 **13 Claims**

1. A method for making a sandwich-like convenience food comprising:

(a) forming a dough sheet at normal ambient temperatures;

(b) freezing a pre-sized layer of interior filling material to a temperature below 0° C.;

(c) inserting the said pre-sized layer, frozen according to step (b), upon a said dough sheet, said dough sheet being then maintained at a non-freezing temperature above 0° C., and totally eveloping the frozen pre-sized layer in the non-

frozen dough sheet, thereby obtaining an assembled, sandwich-like convenience food item;

(d) proofing and baking the said assembled, sandwich-like convenience food item, said proofing being carried out under ambient yeast-activating conditions;

(e) bringing said convenience food item to a temperature above 25° C. by adsorption of microwave energy in a microwave oven zone.

4,207,349

PROTEIN FIBRES

Johannes Visser, Maassluis, and Gijsbert W. P. Bams, Rotterdam, both of Netherlands, assignors to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Filed Feb. 17, 1978, Ser. No. 878,763

Claims priority, application United Kingdom, Feb. 21, 1977, 7204/77

Int. Cl.[2] A23J *3/00*

U.S. Cl. 426—271 13 Claims

1. A process for producing edible fibers which comprises:

(a) providing fat containing milk powder or skim milk power

(b) adding water to the powder to obtain an aqueous mixture having a ratio by weight of casein to water in the range of 0.3 to 0.7 w/w,

(c) reducing the ratio of calcium ions to casein in the mixture to a value below 0.85 mM calcium per gram of casein,

(d) adjusting the pH of the aqueous mixture to a pH of from 5.0 to 6.6,

(e) extruding the mixture from step (d) into a gaseous medium at a temperature ranging from room temperature up to 90° C., to obtain fibres, and

(f) drying the fibres to a moisture content not exceeding 20%.

4,207,350

PROCESS FOR PRESERVING PROCESS CHEESE

Ryuzo Ueno, Nishinomiya; Toshio Matsuda, Itami, and Shigeo Inamine, Kobe, all of Japan, assignors to Kabushika Kaisha Ueno Seiyakuoyo Kenkyujo, Osaka, Japan

Filed Nov. 4, 1977, Ser. No. 848,665

Claims priority, application Japan, Mar. 17, 1977, 52-28592

Int. Cl.[2] A23C *19/10, 19/12*

U.S. Cl. 426—334 2 Claims

1. In a process of preparing process cheese having a protein-containing aqueous phase and a fat-containing oil phase from natural cheese in which a sorbic acid preservative is admixed with natural cheese, during processing of the natural cheese to form the process cheese, the improvement which comprises, using as the sorbic acid preservative, a sorbic acid preparation in the form of particles having a diameter of 300 microns or more, each particle of said preparation comprising 5–90% by weight of finely divided sorbic acid particles having a diameter of 100 microns or less and 10–95% by weight of an easily water-soluble substance which is solid at room temperature selected from the group consisting of sugars, sugar alcohols, organic acids, organic acid salt and phosphates, said sorbic acid preparation being substantially completely dissolved in the protein-containing aqueous phase of the process cheese, wherein said sorbic acid preparation is prepared from a mixture comprising the finely divided sorbic acid, easily water-soluble substance which is solid at normal temperature and a member selected from the group consisting of water and organic solvent or mixture of water and organic solvent, said mixture being formed into particles having a particle diameter of 300 microns or more followed by drying said particles or said mixture being dried and then formed into particles having a particle diameter of 300 microns or more.

4,207,351

WATER REMOVAL BY HYDRATE FORMATION

Thomas M. C. Davies, Cuxton, England, assignor to British Vinegars, London, England

Continuation-in-part of Ser. No. 716,950, Aug. 23, 1976, abandoned. This application Jun. 2, 1977, Ser. No. 802,862

Claims priority, application United Kingdom, Sep. 5, 1975, 36629/75; May 26, 1977, 22282/77

Int. Cl.[2] A23L *2/38*

U.S. Cl. 426—387 52 Claims

1. A process for removing water from an aqueous solution which comprises:

(a) contacting an aqueous solution with a hydrate forming fluid at a temperature below the maximum temperature at which said hydrate forming fluid forms a solid hydrate in the presence of said solution, and at a temperature at which there is precipitation of solid solute and/or of the concentrated solution remaining after hydrate formation, so as to form a magma comprising at least two solid phases which are solid hydrate and solid solute, and at least one liquid phase which includes any unreacted hydrate forming fluid and any unreacted aqueous solution; and

(b) separating from each other, by a fractionation process comprising one of fractional sublimation, fractional evaporation, and fractional elution while there are at least two solid phases in the magna:

(i) the hydrate forming fluid constituent and at least part of the water constituent of said solid hydrate, and

(ii) at least part of said solid solute; and

(c) recovering a substantially hydrate forming fluid free product comprising the solute of said solid solute and any remaining water.

4,207,352

PROCESS FOR THE DECAFFEINATION OF RAW COFFEE BEANS

Hans-Albert Kurzhals, Hambergen-Heibenbüttel, and Klaus F. Sylla, Bremen, both of Fed. Rep. of Germany, assignors to decofa Kaffee-Bearbeitungs-GmbH, Fabrikenufer, Bremen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 902,005

Claims priority, application Fed. Rep. of Germany, May 5, 1977, 2720203

Int. Cl.[2] A23F *1/10*

U.S. Cl. 426—428 17 Claims

1. Process for the decaffeination of raw coffee beans, comprising treating raw coffee beans containing 15 to 55 percent by weight water with the ester of low-molecular weight alkanoic acid containing 1 to 5 carbon atoms with a C_1–C_3 alkanol in combination with a ketone having 3 to 6 carbon atoms and a boiling point below 100° C; wherein the concentration of the ketone based upon the total of the ester and ketone is 0.05 to 50 percent by weight; wherein the weight ratio of the ester-ketone combination to the raw coffee beans is 1:1 to 100:1; and separating ester and ketone from the coffee beans to at least the extent that the amount of ester and ketone remaining in the treated coffee after roasting are no greater than that in untreated roasted coffee.

4,207,353

FOOD CASING AND METHOD OF PREPARING SAME

Jerome J. M. Rasmussen, Burbank, Ill.; Richard C. Waldman, Glen Rock, Pa., and Richard L. Oliver, Schaumburg, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 848,065, Nov. 3, 1977, Pat. No. 4,161,968.
This application Feb. 21, 1979, Ser. No. 13,536
Int. Cl.[2] A22C *13/00*; F16L *11/02*; A22C *11/00*
U.S. Cl. 426—513 31 Claims

1. A method of preparing a cellulose food casing for use with a snack food type product which comprises coating the internal surface of said food casing with a release coating composition comprising at least about 0.286% by weight of a water soluble cellulose ether and at least 0.029% by weight of cationic thermosetting resin.

18. A method of preparing a processed food product such as a snack food type product wherein the food product is processed in a food casing, wherein the improvement comprises using a cellulosic food casing including an internal release coating comprising at least about 0.286% by weight of water soluble cellulose ether and at least 0.029% by weight of cationic thermosetting resin, and peeling said food casing from said food product subsequent to said processing.

4,207,354

METHOD FOR PROCESSING FISH CONTAMINATED WITH SPOROZOA

Hiroshi Haga, Machida; Ritsuo Shigeoka, and Takafumi Yamauchi, both of Hachioji, Japan, assignors to Nippon Suisan Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 31, 1978, Ser. No. 956,997
Claims priority, application Japan, Apr. 10, 1978, 53-41863
Int. Cl.[2] A22C *25/00*
U.S. Cl. 426—574 4 Claims

1. A process for producing coagulated fish meat paste from raw fish meat containing jellied meat due to contamination with sporozoa comprising:

(1) washing said raw contaminated fish meat in water;
(2) removing said water by pressing or centrifuging;
(3) grinding said washed raw contaminated fish meat;
(4) adding at any point from steps (1) to (3), inclusive, from 4–40 parts by weight of egg white to 100 parts by weight of said contaminated fish meat;
(5) shaping said ground, soaked, treated, raw contaminated fish meat and
(6) cooking said treated contaminated fish meat to produce a coagulated fish meat paste.

4,207,355

COLD-WATER DISPERSIBLE, GELLING STARCHES

Chung-Wai Chiu, Princeton, and Morton W. Rutenberg, North Plainfield, both of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jan. 8, 1979, Ser. No. 1,720
Int. Cl.[2] A23L *1/195*
U.S. Cl. 426—578 5 Claims

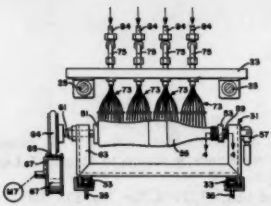
1. A cold-water dispersible, modified tapioca starch with gelling properties, prepared by drum-drying a tapioca starch which has been converted to a water fluidity of about 10 to about 63 and thereafter reacted with at least 0.005% by weight of a crosslinking agent, said converted, crosslinked starch being further defined as having a Brabender Viscosity Differential, measured between 80 and 95° C., of from about −20 to +30%, measured at 7% solids using a 700 cm.-g. cartridge, or of from about −35 to −4%, measured at 10 % solids using a 350 cm.-g. cartridge, and as having a Brabender viscosity at 80° C. of at least about 100 B.U., measured at 7% solids using a 700 cm.-g. cartridge, or of at least about 400 B.U., measured at 10% solids using a 350 cm.-g. cartridge, said converted, crosslinked starch after drum-drying being capable of forming a gel having a Bloom strength of at least 45 grams.

4,207,356

METHOD FOR COATING GLASS CONTAINERS

Robert E. Waugh, Columbus, Ohio, assignor to The D. L. Auld Company, Columbus, Ohio

Division of Ser. No. 748,946, Dec. 9, 1976, Pat. No. 4,092,953.
This application Mar. 6, 1978, Ser. No. 883,689
Int. Cl.[2] B05D *1/02, 1/30*
U.S. Cl. 427—55 6 Claims



1. A method of coating a glass container with a layer of plastic comprising:

(a) rotating the container about a horizontal axis,
(b) simultaneously applying uncured plastic liquid to a plurality of container surface areas by flow coating said plastic liquid from multiple nozzle means positioned along the length of the container and fixed stationarily with respect to that length, each said nozzle means having a multiple number of application tubes, the amount of uncured plastic liquid applied to each surface area by each nozzle means being independent of the amount of uncured plastic liquid applied to any other surface area, and resulting in an integral coating on the container which after cure resists wear during use and shattering of the bottle when dropped, and
(c) curing said plastic liquid which has been applied to said container.

4,207,357

METHOD FOR COATING A POLYCARBONATE ARTICLE WITH SILICA FILLED ORGANOPOLYSILOXANE

John C. Goossens, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 13, 1978, Ser. No. 959,588
Int. Cl.[2] B05D *1/38, 7/04, 3/02*
U.S. Cl. 427—162 8 Claims

1. A method for producing a polycarbonate article having improved mar, abrasion, scratch and chemical solvent resistance comprising:

(i) applying onto a polycarbonate substrate a primer emulsion composition containing, in percent by weight, (a) from about 1 to about 10 percent of a thermosettable acrylic polymer, (b) from about 20 to about 45% of a hydroxy ether, and (c) from about 45 to about 79 percent of water;
(ii) evaporating off a substantial portion of said water and hydroxy ether from said primer emulsion composition to form a thin layer comprised of thermosettable acrylic;
(iii) thermally curing said thermosettable acrylic to form a thermoset acrylic primer layer;
(iv) applying onto said cured primer layer a silica filled further curable organopolysiloxane top coat composition comprising a dispersion of colloidal silica in a lower alkanol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ wherein R is a radical selected from the group consisting of an alkyl radical containing 1 to 3 carbon atoms, the vinyl radical, the 3,3,3-trifluoropropyl radical, the gammaglycid oxypropyl radical and the gamma-methacryloxpropyl radical, at least 70 weight percent of said silanol being $CH_3Si(OH)_3$, said composi-

tion containing sufficient acid to provide a pH in the range of 3.0 to 6.0;

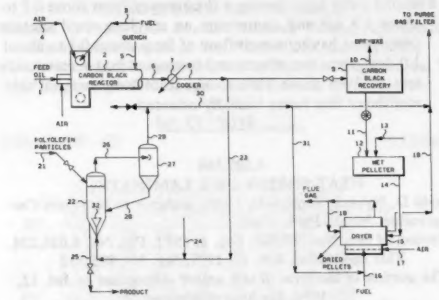
(v) evaporating off a substantial portion of the volatile solvents from said top coat composition thereby forming a layer comprised of a silica filled partial condensate of said silanol; and,

(iv) thermally curing said silica filled partial condensate of said silanol.

4,207,358
IMPREGNATING SOLID POLYOLEFIN WITH SMALL SIZE PARTICLES

Paul H. Johnson, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 15, 1977, Ser. No. 806,656
Int. Cl.[2] B05D *7/02*
U.S. Cl. 427—185 **11 Claims**



1. A method for impregnating a solid polyolefin with a finely divided, substantially solid substance, which comprises suspending the impregnating substance in a hot gaseous fluidizing medium which is used to fluidize a mass of solid polyolefin particles under conditions, including a temperature of said medium which will in said medium, soften the solid polyolefin particles which remain solid though softened sufficiently to cause said solid, softened particles in said fluidizing medium to retain a desired amount of said substance when contacted while softened and in said hot gaseous fluidizing medium with said impregnating substance, and fluidizing a bed of solid polyolefin particles under said conditions with said hot gaseous fluidizing medium containing said impregnating substance.

4,207,359
METHOD OF POWDER COATING A GLASS CONTAINER

Martin J. Hannon, Martinsville, and Alex S. Forschirm, Parsippany, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 844,963, Oct. 25, 1977, Pat. No. 4,163,031. This application Dec. 20, 1978, Ser. No. 971,176
Int. Cl.[2] B05D *3/02*
U.S. Cl. 427—195 **15 Claims**

1. A process for coating a glass container in order to prevent the scattering of glass fragments, said process comprising

(A) preheating said glass container,

(B) applying on the external wall surface of said container a powder composition comprising a melt blend mixture of

(1) from about 25 to about 90% by weight of a block copolymer which is selectively hydrogenated to at least some degree and having at least two kinds of polymer blocks wherein one polymer block is designated by A and a second polymer block is designated by B such that prior to hydrogenation,

(a) each A is a polymer end block of a monovinyl or alpha alkyl monovinyl arene having a number average molecular weight in the range of from about 5,000 to about 75,000, said blocks A comprising from about 5 to 50% by weight of the total block copolymer, and

(b) each B is a polymer mid block having a number average molecular weight of from about 30,000 to about 300,000, and formed from a conjugated diene selected from homopolymers of at least one conjugated diene having 4 to 10 carbon atoms per molecule, said blocks B comprising from about 50 to about 95% weight of the total block copolymer, and

(2) from about 10 to about 75% by weight of at least one melt flow modifier selected from the group consisting of

(a) monovinyl arene homopolymers

(b) alpha alkyl monovinyl arene homopolymers, and

(c) copolymers of monovinyl arenes and alpha alkyl monovinyl arenes,

wherein the aromatic portions of the polymers described in (2) (a), (b), and (c) are at least partially hydrogenated to remove the aromatic character thereof,

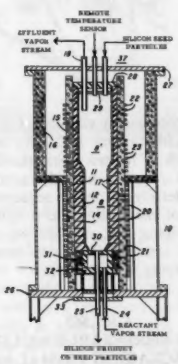
(C) baking the coated container until the powder particles become molten and form a smooth, molten coating on the glass surface, and

(D) cooling the coated container to substantially ambient temperature.

4,207,360
SILICON SEED PRODUCTION PROCESS

Francois A. Padovani, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 31, 1975, Ser. No. 627,635
Int. Cl.[2] B05D *7/00*; C23C *11/06*
U.S. Cl. 427—213 **10 Claims**



1. A method for the production of elemental silicon comprising the steps of:

contacting a first particulate bed of silicon particles at a temperature between 900° and 950° C. with a stream of fluidizing gas at a velocity which favors some breakage of particles;

contacting a second particulate bed of silicon particles at a temperature substantially above 1000° C. with a stream of gaseous hydrogen containing a reducible silicon compound;

separating relatively small silicon particles from said first bed and adding them to said second bed; and

recovering relatively large silicon particles from said second bed as a product of the method.

4,207,361

CORROSION INHIBITED MANGANESE ALLOYS IN THERMAL METALS

Anthony J. Izbicki, Reading, Pa., assignor to Hood & Company, Inc., Hamburg, Pa.

Filed Jul. 17, 1978, Ser. No. 925,436
Int. Cl.[2] C23C 3/00
U.S. Cl. 427—328 1 Claim

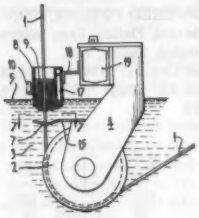
1. In the manufacture of bimetals, a method for inhibiting the corrosion a high thermal expansive metal selected from the group consisting of 72% manganese, 18% copper, and 10% nickel; and 75% manganese, 10% copper, and 15% nickel; the improvement comprising cleaning the surface of the metal; contacting the cleaned surface of the metal with an aqueous solution containing the ionized salt of a metal more noble than manganese selected from the group consisting of nickel and copper; and exchanging the surface layer of manganese with the more noble metal by intrinsic voltaic deposition.

4,207,362

METHOD OF AND APPARATUS FOR WIPING HOT DIPPED METAL COATED WIRE OR STRIP

Maxwell R. Porter, Ermington; Jack P. Sciffer, New Lambton; Zigmunt P. Adamiak, Kotara, and Alexander Dim, Speers Point, all of Australia, assignors to Australian Wire Industries Proprietary Limited, Victoria, Australia

Filed Nov. 8, 1978, Ser. No. 958,602
Claims priority, application Australia, Nov. 21, 1977, PD2481
Int. Cl.[2] C23C 1/02
U.S. Cl. 427—367 15 Claims



1. A method of continuously wiping hot dipped metal coated wire or strip by withdrawing said wire or strip vertically upwards from a bath of molten metal through a wiping bed located at the point of emergence, characterised by the positioning of a static interference device adjacent the wire or strip below the surface of the molten metal bath and below and spaced from said wiping bed, said spacing not exceeding 50 mm, and such that it restricts the lamella flow of molten metal entrained by the moving wire or strip.

4,207,363

FLEXIBLE HEAT-SHRINKABLE MULTILAYER FILM FOR PACKAGING PRIMAL MEAT

Stanley Lustig, Park Forest, and John Anthony, Downers Grove, both of Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Mar. 29, 1978, Ser. No. 891,262
Int. Cl.[2] B65D 25/06; B32B 27/08
U.S. Cl. 428—35 19 Claims

1. A flexible heat-shrinkable multilayer film adapted for use in the packaging of primal meat cut, consisting essentially of a first outer layer having a thickness of from about 0.4 mil to about 1.1 mil and comprising a blend of a propylene-ethylene copolymer having a high isotactic molecular structure with less than about 6% by weight ethylene and having a melt flow of from about 1.5 to about 18 decigrams per minute, a (butene-1)-ethylene copolymer having a high isotactic molecular structure with less than about 10% by weight being ethylene and having a melt flow of from about 0.1 to about 5.0 decigrams per minute, and a thermoplastic elastomer selected from the group consisting of ethylene-propylene copolymers and ethylene-propylene diene terpolymers, the ratio by weight of said propylene-ethylene copolymer to the (butene-1)-ethylene copolymer being from about 2:1 to about 1:2 and said thermoplastic elastomer being present from about 10% to about 50% by weight;

a first core layer having a thickness of from about 0.2 mil to about 0.5 mil and connected to said first outer layer and being capable of being stretched during the biaxial orientation of the multilayer film and comprising an extrudable adhesive;

a second core layer having a thickness of from about 0.3 mil to about 0.9 mil and connected to said first core layer and serving as an oxygen barrier to protect the meat cut from spoilage and being compatible to the biaxial orienting and heat shrinking of said film; and

a second outer layer having a thickness of from about 0.7 to about 1.9 mil and comprising an ethylene vinyl acetate copolymer having a melt flow of from about 0.1 to about 1.0 decigrams per minute and having a vinyl acetate content of from about 10% to about 14% by weight; said multilayer film being biaxially oriented.

4,207,364

HEAT-SHRINKABLE LAMINATE

David D. Nyberg, Sunnyvale, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 285,567, Sep. 1, 1972, Pat. No. 4,035,534. This application Jun. 10, 1977, Ser. No. 805,532
The portion of the term of this patent subsequent to Jul. 12, 1994, has been disclaimed.
Int. Cl.[2] F16L 9/14; B32B 31/00; H02G 15/02; B29C 27/00
U.S. Cl. 428—36 2 Claims

1. A tubular article comprising, in combination, an inner tube and a coaxial outer tube, said inner tube comprising elastomeric material and being in a radially expanded condition whereas the outer of said tubes comprises a glassy or crystalline linear polymeric material, said inner radially expanded tube being bonded to and maintained in its radially expanded condition by said outer tube.

4,207,365

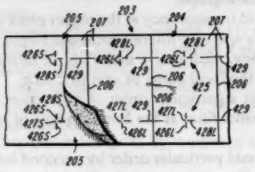
COMPOSITE LABEL WEB

Paul H. Hamisch, Jr., Franklin, Ohio, assignor to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 476,744, Jun. 5, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,445, Jul. 18, 1973, abandoned, which is a continuation-in-part of Ser. No. 312,454, Dec. 6, 1972, Pat. No. 3,968,745, which is a continuation-in-part of Ser. No. 208,035, Dec. 8, 1971, abandoned. This application Feb. 17, 1976, Ser. No. 658,645
Int. Cl.[2] B32B 31/00
U.S. Cl. 428—40 3 Claims

1. The combination of a longitudinally extending web of supporting material, label material formed into a plurality of labels carried by the web of supporting material, pressure sensitive adhesive on the label material releasably securing the labels to the supporting material web, a plurality of groups of bar cuts extending through the label material, the adhesive and the associated supporting material, wherein the improvement

resides in each group of bar cuts comprising a pair of relatively short generally transverse bar cuts spaced apart by a land and



a generally longitudinally extending bar cut extending to the land.

4,207,366

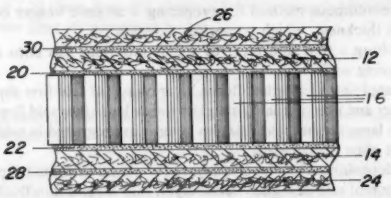
STRUCTURED ART SURFACE

Kenneth E. Tyler, P.O. Box 294, Bedford Village, N.Y. 10506

Continuation-in-part of Ser. No. 867,135, Jan. 5, 1978, abandoned, which is a continuation of Ser. No. 693,374, Jun. 7, 1976, abandoned. This application Jul. 19, 1978, Ser. No. 925,926

Int. Cl.[2] B32B 3/12

U.S. Cl. 428—73 **5 Claims**



1. A dimensionally stable, crush resistant, non-warping, structured art surface, which comprises;

(i) a sandwich laminate support panel having

(a) a sandwich core of neutral paper in the form of a honeycomb having upper and lower planar surfaces and a plurality of open ended bores perpendicular to and communicating between the upper and lower surfaces, said bores being separated from each other by thin paper walls and having cross-sectional dimensions of from about ¼ inch to about 1 inch; and

(b) facing sheets of neutral paper having first and second planar surfaces, adhesively bonded by their first surfaces to upper and lower surfaces of the core with a water-resistant, neutral pH adhesive, so as to close the ends of said bores;

(ii) sheets of art paper mounted on the second planar surfaces of each facing sheet; and adhesively bonded by

(iii) a layer of water-resistant, cured, neutral pH, adhesive interposed between the sheets of art paper and said second planar surfaces of the facing sheets;

said sheets of art paper on each facing sheet having similar dimensional stability in both planes and similar response to planar stress.

4,207,367

NONWOVEN FABRIC

John H. Baker, Jr., Philadelphia, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Continuation of Ser. No. 497,024, Aug. 13, 1974, abandoned, which is a continuation of Ser. No. 23,751, Mar. 30, 1970, abandoned. This application Jul. 31, 1978, Ser. No. 929,835

Int. Cl.[2] B32B 3/30

U.S. Cl. 428—171 **9 Claims**

1. A nonwoven, self-sustaining absorbent fabric having the requisite cohesive strength, flexibility, absorbency and abrasion-resistance to render it usable by itself in household wiping, industrial wiping and like applications, said fabric comprising:

A. a sheet of randomly arranged and intermingled wood pulp fibers and longer reinforcing fibers, over 50% of said fibers being wood pulp, said sheet having opposed major surfaces;

B. an embossed pattern in said sheet providing a plurality of spaced compressed valley regions over substantially the entire extent thereof, said compressed valley regions being denser than and separated by high loft regions; and

C. a non-fibrous adhesive means (1) interconnecting surface fibers of the opposed major surfaces of the embossed sheet to stabilize substantially all of said surface fibers to enhance the abrasion resistance of said sheet, (2) defining adhesive networks extending completely through the sheet over substantially the entire extent thereof in the compressed valley regions to enhance the peel and tensile strengths of said sheet and (3) extending partially through said sheet in the high loft regions to leave interior portions of said high loft regions unbonded, and highly absorbent.

4,207,368

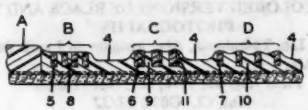
DECORATIVE MULTI-LEVEL EMBOSSED SURFACE COVERING

Donald E. Schneider, Lititz; George A. Tudor, and Gary E. Williams, both of Lancaster, all of Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Division of Ser. No. 889,532, Mar. 23, 1978, Pat. No. 4,158,073. This application Feb. 5, 1979, Ser. No. 9,289

Int. Cl.[2] B32B 3/30

U.S. Cl. 428—172 **16 Claims**



1. A resinous surface covering having a decorative, multi-level wear surface comprising

(a) a fused resinous base layer;

(b) a non-porous vinyl resin composition layer normally being of substantially constant thickness fused to and supported by said fused resinous base layer;

(c) design elements in said vinyl resin composition layer covering at least portions thereof in a pattern, said design elements including areas which are substantially completely filled with pigmented, fused resinous ink, areas having a plurality of minute closely spaced dots of fused, pigmented, resinous ink, the adjacent edge portions of at least a majority of said dots being variably separated from each other in distances varying from about 5 to 60 mils (0.13 to 1.52 mm) by non-ink-containing portions of said vinyl resin composition layer and, completely non-ink-containing areas, said areas containing the plurality of closely spaced dots having an overall elevation intermediate between that of the areas which are completely filled with the pigmented resinous ink and the completely non-ink-containing areas, said non-ink-containing portions of said vinyl resin composition layer between the dots of the dot-containing areas having elevations which decrease as the distance between the dots increases but, which, within

the stated range of separating distance of the dots, are at elevations above those of the completely non-ink-containing areas.

4,207,369

CONDUCTOR COMPOSITIONS COMPRISING ALUMINUM, SILICON AND GLASS

Casimir W. Kazmierowicz, Mission Viejo, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 764,093, Jan. 31, 1977, Pat. No. 4,148,761.
This application Nov. 20, 1978, Ser. No. 962,441
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.
Int. Cl.[2] B32B *3/00, 7/00*
U.S. Cl. 428—201 **10 Claims**

1. A conductor comprising successively a nonconducting substrate; a thick film pattern comprising from about 0.25 to about 30 weight percent silicon, from about 10 to about 50 weight percent glass having a softening point below 660° C., and from about 20 to about 90 weight percent aluminum; and a layer of nickel over said thick film pattern having a thickness from about 0.05 to about 0.5 mil; wherein said thick film pattern has a lower resistivity than an aluminum-glass thick film pattern formed from a composition having the same glass and binder content as employed in the composition from which the silicon-aluminum-glass thick film pattern is formed.

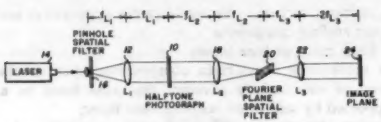
7. A paste for use in manufacturing an electroconductive material comprising an inert liquid vehicle moiety and a solid moiety wherein said solid moiety comprises from about 0.25 to about 30 weight percent silicon, from about 10 to about 50 weight percent glass having a softening point below 660° C. and from about 20 to about 90 weight percent aluminum, wherein said paste when fired yields an electroconductive material having a lower resistivity than an aluminum-glass electroconductive material formed from paste having the same glass and vehicle content as employed in the paste from which said fired silicon-aluminum-glass electroconductive material is formed.

4,207,370

METHOD OF PRODUCING CONTOUR MAPPED AND PSEUDO-COLORED VERSIONS OF BLACK AND WHITE PHOTOGRAPHS

Hua-Kuang Liu, Tuscaloosa, Ala., assignor to Lumin Inc., Tuscaloosa, Ala.

Filed Aug. 23, 1976, Ser. No. 716,380
Int. Cl.[2] G03B *27/32*
U.S. Cl. 428—204 **14 Claims**



1. The method of making multilevel equidensity contour mappings of an original photograph, comprising the steps of:

a. exposing a light sensitive film through a mask of periodic equal width opaque straight bars, for a first predetermined period of time;

b. changing the relative translational position of said film and said mask such that said mask is offset in a direction perpendicular to said bars and by an effective distance which is less than the distance between any two bars;

c. exposing said film through said mask for a second predetermined period of time;

d. repeatedly exposing and changing the position of said film and said mask until the total distance traversed is equal to the distance between any of said two bars;

e. developing said film to thereby produce a half-tone screen;

f. contact printing on a high contrast photographic negative film, said original photograph through said half-tone screen to thereby produce a half-tone transparency of said original photograph;

g. placing said transparency at the object plane of a first lens;

h. directing a spatially filtered collimated light through said transparency, such that a multitude of diffraction orders appear in the focal plane of said first lens;

i. singling out a particular order of diffraction by placing a thin slit spatial filter at the Fourier plane of said first lens; and

j. reimaging said particular order by a second lens to thereby produce a filtered image at the focal plane of said second lens.

4,207,371

CERAMIC VENEER

Joachim Otto, Giessen, Fed. Rep. of Germany, assignor to Wilhelm Gail'sche Tonwerke KGaA, Giessen, Fed. Rep. of Germany

Continuation of Ser. No. 829,498, Aug. 31, 1977, abandoned.
This application Dec. 15, 1978, Ser. No. 969,964
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1976, 2639522
Int. Cl.[2] B32B *17/06*
U.S. Cl. 428—212 **6 Claims**

1. A continuous method for preparing a ceramic veneer of uniform thickness, which comprises the steps of:

depositing a first thin layer of a first thin-fluid slip onto a moving surface;

then applying a first glass fleece layer on top of said first slip layer and pressing said first glass fleece layer into said first slip layer so that said first slip layer is impregnated in said first glass fleece layer;

then depositing a second thin layer of a second thin-fluid slip on top of said first glass fleece layer, said second thin-fluid slip having a different composition than said first thin-fluid slip and having a different shrinkage rate during baking, a different coefficient of thermal expansion after baking or both a different shrinkage rate and a different coefficient of thermal expansion;

then applying a second glass fleece layer on top of said second slip layer and pressing said second glass fleece layer into said second slip layer so that said second slip layer is impregnated in said second glass fleece layer whereby to form an assembly of said layers;

then heating said assembly to dry said slips whereby to form a dry assembly;

then firing said dry assembly to form a unitary first ceramic veneer product of uniform thickness consisting essentially of two different layers and then cooling said ceramic veneer product, wherein the compositions of said slip layers are effective to cause said ceramic veneer product to remain flat and of uniform thickness during firing and cooling.

4,207,372

DESTRUCTIBLE FILMS FOR MARKING, PROCESS FOR THEIR PRODUCTION, AND THEIR UTILIZATION

Masao Sahara, Uozu, Japan, assignor to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1978, Ser. No. 915,300
Claims priority, application Japan, Jun. 14, 1977, 52-69494
Int. Cl.[2] C08L *27/06, 75/04;* **C09D** *5/08;* **C09J** *7/00*
U.S. Cl. 428—220 **9 Claims**

1. A destructible marking film having a thickness of about 30 to about 100 microns and a destructibility of not more than 150 kg-cm/mm, said film being composed of a resin composition comprising

(A) 100 parts by weight of a vinyl chloride resin having a degree of polymerization of about 600 to about 1,600 and

optionally containing not more than about 15% by weight of a comonomer unit,

(B) about 10 to about 100 parts by weight of a thermoplastic urethane resin,

(C) about 2 to about 15 parts by weight of (1) a copolymer consisting of units of (a) ethylene and (b) a vinyl ester of a C_2–C_{18} aliphatic carboxylic acid, or (2) a copolymer consisting of units of (a) ethylene, (b) a vinyl ester of a C_2–C_{18} aliphatic carboxylic acid and (c) an acrylate or methacrylate ester, and

(D) about 10 to about 150 parts by weight of a pigment.

4,207,373

HIGHLY FILLED POLYOLEFIN COMPOSITIONS

Leon Segal, Randolph, N.J., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 354,268, Apr. 25, 1973, abandoned. This application Nov. 25, 1974, Ser. No. 527,100

Int. Cl.² B32B *17/10*

U.S. Cl. 428—251 **12 Claims**

5. An impact resistant polymeric laminate, capable of being formed into molded parts, comprising about 25–80% by weight polyolefin, about 10–60% rigid inorganic particulate filler of aspect ratio less than 15 and about 10–45% fiber reinforcement of length at least 1½ inches, in which the filler and polymer as compounded in the melt have a flexural modulus at least 1.25 times that of the base polyolefin prior to introduction of the fiber reinforcement.

4,207,374

FLAME-RETARDANT FILM

Gaylord L. Groff, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 5, 1978, Ser. No. 902,916

Int. Cl.² C09K *3/28;* **B32B** *27/36, 27/38, 27/40*

U.S. Cl. 428—261 **15 Claims**

1. A flame-retardant, flexible, electrically insulating film material comprising a flexible thermoplastic film backing having a flexible coating on at least one surface thereof, said coating comprising a thermoset fire-retardant resin composition.

4,207,375

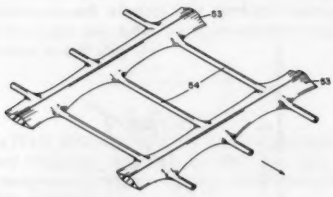
NETWORK STRUCTURES AND METHODS OF MAKING SAME

Charles W. Kim, Wilmington; Chia-Seng Liu, and Richard MacDuff, both of Newark, all of Del., assignors to Hercules Incorporated, Wilmington, Del.

Continuation of Ser. No. 590,664, Jun. 26, 1975, abandoned, which is a division of Ser. No. 324,028, Jan. 16, 1973, Pat. No. 3,922,329. This application Dec. 15, 1976, Ser. No. 750,984

Int. Cl.² B32B *5/26*

U.S. Cl. 428—286 **13 Claims**



1. A nonwoven fabric comprising:

a first network structure having a plurality of parallel continuous main filaments extending in a first direction and having a substantially uniform cross-section and being substantially uniformly and continuously oriented, and a plurality of discontinuous parallel tie filaments extending in a second direction different from said first direction, said tie filaments interconnecting said main filaments and having no substantial portion thereof crossing over said main filaments, each of said tie filaments between each pair of adjacent main filaments having its longitudinal axis in said second direction in axial alignment with the longitudinal axis in said second direction of the adjacent tie filament; and

a second network structure having a plurality of parallel continuous main filaments extending in a third direction different from said first direction and having a substantially uniform cross-section and being substantially uniformly and continuously oriented, and a plurality of parallel tie filaments extending in a direction other than said third direction, said tie filaments interconnecting said main filaments and having no substantial portion thereof crossing over said main filaments, each of said tie filaments between each pair of adjacent main filaments having its longitudinal axis in said second direction in axial alignment with the longitudinal axis in said second direction of the adjacent tie filament, said first and second network structures being bonded together to form a two-layer nonwoven fabric,

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4,207,376

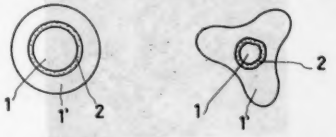
ANTISTATIC FILAMENTS HAVING AN INTERNAL LAYER COMPRISING CARBON PARTICLES AND PROCESS FOR PREPARATION THEREOF

Tadahito Nagayasu, and Tomitake Higuchi, both of Nagoyashi, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 14, 1979, Ser. No. 48,446

Int. Cl.² B29F *3/10;* **B32B** *27/02, 27/14, 27/18*

U.S. Cl. 428—367 **6 Claims**



1. An antistatic composite filament having a three-layer structure including a core layer, a sheath layer and an intermediate layer, each of which is continuous in the axial direction of the filament, said core layer being composed of an oriented and crystallized, electrically non-conductive synthetic polymer, said sheath layer being composed of a synthetic polymer of the same kind as of the polymer constituting the core layer and said intermediate layer being composed of an electrically conductive synthetic polymer containing carbon black dispersed therein and being present in the entire intermediate area between the core layer and sheath layer.

6. A process for the preparation of antistatic composite filaments, which comprises dividing a molten, fiber-forming electrically non-conductive synthetic polymer into a core component steam and a sheath component stream in a spinneret pack, flowing a molten, electrically conductive synthetic polymer having electrically conductive carbon black dispersed therein around the periphery of the core component stream to form a two-layer stream, flowing the sheath component stream around the periphery of the two-layer stream to form a three-layer stream, extruding the three-layer stream from a spinneret hole, and orienting and crystallizing at least the core and sheath components.

4,207,377

COMPOSITE ZINC OXIDE COATING ON AN INERT PIGMENT CORE

Robert H. Kindrick, Flossmoor, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 749,124, Dec. 9, 1976, abandoned. This application Dec. 12, 1977, Ser. No. 859,349
Int. Cl.[2] B32B *9/04*
U.S. Cl. 428—404 13 Claims

1. A composite zinc oxide coated inorganic pigmentary inert core product comprising lamellar crystals of zinc oxide extending outwardly from and substantially about the surface of said core, said crystals in sufficient concentration to provide a specific surface area of said composite product of in excess of ten square meters per gram.

4,207,378

EXPANDED STYRENE-POLYMERS AND POLYOLEFIN MICRO-BITS AND THEIR PREPARATION

Max Klein, 257 Riveredge Rd., Tinton Falls, N.J. 07724

Continuation-in-part of Ser. No. 342,535, Mar. 16, 1973, abandoned. This application Sep. 15, 1977, Ser. No. 833,644
Int. Cl.[2] B32B *27/40*
U.S. Cl. 428—402 18 Claims

1. An expanded, thermoplastic, non-brittle in its said expanded form polymer selected from
(i) a styrene-polymer,
(ii) a polyolefin which is a polymer member of the group of olefin homologs from ethylene to a methylpentene and having 2 to 5 carbons in its chain,
(iii) a melt alloy of polyethylene with about ten percent by weight of polystyrene,
(iv) a copolymer of polypropylene with from about 20 to about 30 percent of polyethylene by weight, and
(v) a melt alloy of polypropylene in an amount exceeding 50 percent by weight of said alloy and a copolymer of polyethylene and polyvinyl acetate to the extent of up to about 30 percent, which expanded polymer is characterized by being in the form of micro-bits (a) from about 40 to about 325 microns long and from about 20 to about 325 microns wide, (b) from substantially completely to entirely completely free of intact cells of the starting expanded polymer bit-pieces from which said micro-bits were produced, (c) substantially without any uniformity in outline of the individual micro-bit particles, and (d) in density from about 85 percent of, to about substantially the same as, the specific unexpanded polymer from which there was provided the aforesaid starting expanded polymer.

4,207,379

SUBSTRATE WEB COATED WITH A THERMOSETTING COATING RESIN

Jürgen Fock, Düsseldorf; Eckehard Schamberg, and Werner Schäfer, both of Essen, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Fed. Rep. of Germany

Filed Jul. 31, 1978, Ser. No. 929,408
Claims priority, application Fed. Rep. of Germany, Aug. 1, 1977, 2734669
Int. Cl.[2] B32B *27/06, 21/08, 23/08*
U.S. Cl. 428—480 15 Claims

1. In a substrate web, coated with a thermosetting coating resin, in particular a web of paper, for the surface finishing of woodwork panels or laminates,
the improvement wherein the coating resin is a modified polyester resin, composed of
(a) 60 to 95% by weight of a hardenable polyester resin,
(b) 1 to 15% by weight of a cross-linking agent for the polyester resin,
(c) 5 to 40% by weight of a thermoplastic containing predominantly linear, high-molecular weight, reactive groups,
(d) 1 to 15% by weight of a monomer with at least one polymerizable double bond and at least one group which reacts with the reactive group of the thermoplastic, and
(e) a hardening catalyst.

4,207,380

ALUMINUM THERMOSTAT METAL

Anthony J. Izbicki, Reading, Pa., assignor to Hood & Company, Inc., Hamburg, Pa.

Filed Jul. 17, 1978, Ser. No. 925,435
Int. Cl.[2] B32B *7/02, 15/04, 15/20*
U.S. Cl. 428—616 4 Claims

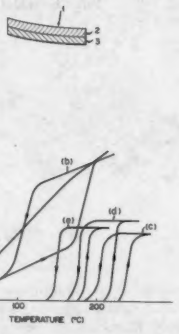
1. A bimetal characterized in that the high thermal expansive metal is a strain hardenable aluminum having a minimum purity of at least 99% and being present in an amount above about 50 volume percent.

4,207,381

BIMETAL AND METHOD FOR MANUFACTURING THE SAME

Tatsuyoshi Aisaka; Mitsuo Kawai; Fumio Mori, and Shinzo Sugai, all of Yokohama, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Feb. 22, 1978, Ser. No. 880,301
Claims priority, application Japan, Feb. 23, 1977, 52-18082; Mar. 2, 1977, 52-21496
Int. Cl.[2] B32B *15/18;* C22C *38/38*
U.S. Cl. 428—619 7 Claims



1. A bimetal comprising:
(1) a high expansion component of a metal alloy whose thermal expansion coefficient rapidly changes from 21.5×10^{-6}/°C. less to 50×10^{-6}/°C. or more starting at a

temperature of between 100° C. and 250° C., which consists of 15 to 30% by weight of manganese and substantially iron as the remainder, and which is substantially free from work strains and

(2) a low expansion component of a metal alloy whose thermal expansion coefficient is substantially constant regardless of temperature change,

said bimetal exhibiting a hysteresis.

4,207,382

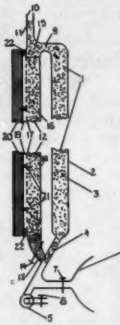
FLUIDIZED AIR-DEPOLARIZED ELECTRODES AND RELATED APPARATUS AND METHODS

Solomon Zaromb, 171 Clifton Ave., Newark, N.J. 07104

Continuation of Ser. No. 813,483, Jul. 7, 1977, abandoned. This application Aug. 31, 1978, Ser. No. 938,395

Int. Cl.² H01M *12/06*

U.S. Cl. 429—19 **18 Claims**



1. An air-breathing oxygen-consuming electrochemical cell comprising a fluidized-bed oxygen absorber and a fluidized-bed cathode, a current-collecting means forming part of said cathode, said absorber and cathode comprising fluidized wetted carrier particles, an oxygen-transfer means within said absorber for exposing said wetted particles to oxygen from air so as to permit rapid enrichment of said particles with oxygen without resort to bubbling air through or mixing air with a continuous liquid electrolyte phase, said oxygen transfer means comprising an oxygen-permeable electrolyte-impermeable membrane whose outside surface is exposed to air and whose inner surface is readily accessible to said fluidized carrier particles, near which inner surface said particles become rapidly oxygen-enriched, means for bringing the resulting oxygen-enriched particles towards said current-collecting means of said cathode where part of the oxygen carried by these particles is electroreduced, whereby said particles become partly depleted of oxygen, and means for returning said oxygen-depleted particles to said absorber.

4,207,383

NEGATIVE, HIGHLY ACTIVE IRON ELECTRODE

V. Anthony Oliapuram, Frankfurt am Main, Fed. Rep. of Germany, assignor to Varta Batterie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed May 5, 1978, Ser. No. 903,203

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727393

Int. Cl.² H01M *4/24*

U.S. Cl. 429—48 **11 Claims**

1. A negative, highly active metallic iron electrode for an electrical storage battery wherein the electrode is coated with an oxidation impeding protective layer of sulfur or selenium.

4,207,384

ELECTRIC STORAGE BATTERIES

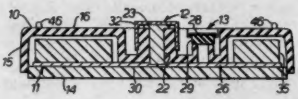
Kenneth Peters, Walkden, and Barry Culpin, Bolton, both of England, assignors to Chloride Group Limited, London, England

Filed May 23, 1979, Ser. No. 41,809

Claims priority, application United Kingdom, May 24, 1978, 21868/78; May 24, 1978, 53499/77; Dec. 14, 1978, 48486/78

Int. Cl.² H01M *2/12*

U.S. Cl. 429—54 **17 Claims**



1. a sealed lead acid button cell, said cell having a moulded acid resistant polymer case formed in two portions, each said portion having an external surface, containing an electrode and having a central boss defining a passage leading into said cell, a metal plug having an inner end and an outer end being located in said passage, said inner end of said plug being electrically connected to said electrode, and a metal cap surrounding said central boss and being electrically connected to said plug at said outer end.

4,207,385

CLOSED TYPE ALKALINE STORAGE BATTERY

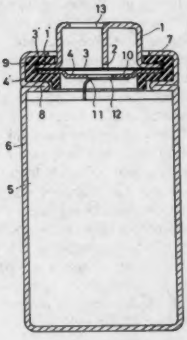
Hideki Hayama, Yokohama, Japan, assignor to Furukawa Denchi Kabushiki Kaisha, Yokohama, Japan

Filed Feb. 27, 1979, Ser. No. 15,749

Claims priority, application Japan, Mar. 4, 1978, 53-27908[U]

Int. Cl.² H01M *2/12*

U.S. Cl. 429—56 **3 Claims**



1. A closed typed alkaline storage battery comprising a metallic hat-shaped terminal closure having a piercing needle; a puncturable metallic diaphragm positioned below the piercing needle and fixed by caulking at its peripheral edge portion to a peripheral edge of the closure; a comparative thick and hard subsidiary metal plate placed at its peripheral edge portion on the inner surface of the peripheral edge portion of the diaphragm, both the peripheral edge portion being not welded together; the subsidiary metal plate having an open portion and being a dish-shaped bent plate having at its intermediate portion an offset circular portion, so that a central portion of the subsidiary metal plate is spaced from a central portion of the diaphragm; the metallic hat-shaped terminal closure, the puncturable metallic diaphragm and the subsidiary metal plate which are put one upon another being applied through an annular packing to an open portion of a tubular metallic con-

tainer containing therein a battery element; the three peripheral edge portions of the closure, the diaphragm and the subsidiary metal plate being clamped in airtight relation through the packing between a caulked end portion and an inner step portion of the metallic container; and a leading wire extending from one polarity electrode of the battery element and connected to a central portion of the subsidiary metal plate.

4,207,386

ELECTROCHEMICAL STORAGE CELL

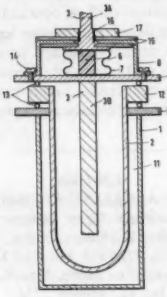
Henner Meinhold, Heidelberg; Wilhelm Haar, Sandhausen, and Wilfried Fischer, Neckargemünd, all of Fed. Rep. of Germany, assignors to Brown, Boveri & Cie AG., Mannheim-Käfertal, Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,269

Claims priority, application Fed. Rep. of Germany, May 5, 1978, 2819583

Int. Cl.[2] H01M 2/00

U.S. Cl. 429—62 **20 Claims**



1. Electrochemical storage cell having an anode chamber for an alkali metal anolyte as a reactant and a cathode chamber for a chalcogen catholyte as a second reactant, which chambers are separated from each other by an alkali ion-conducting solid electrolyte wall, with one reactant chamber defined by the solid electrolyte wall and the other reactant chamber confined, at least in part by a metal wall, an electrode as a first current collector extending from outside the reactant chamber defined by the solid-electrolyte wall to the interior of said reactant chamber, and a second current collector formed by part of said metal wall which confines the chamber containing the other reactant, the improvement comprising said first current collector having an outer sub-part which extends outside the reactant chamber and an inner sub-part which extends into the interior of said reactant chamber, and the outer sub-part and the inner sub-part connected to an electrically conducting contact element which melts at a predetermined temperature exceeding the operating temperature of the cell.

4,207,387

CONTAINER FOR A REMOTELY-VENTED BATTERY

Gottfried W. Jutte, Indianapolis, Ind., assignor to The Richardson Company, Des Plaines, Ill.

Filed Aug. 21, 1978, Ser. No. 935,251

Int. Cl.[2] H01M 2/12

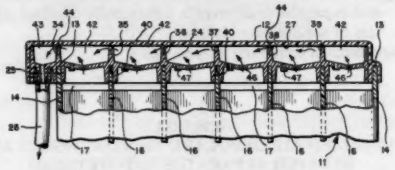
U.S. Cl. 429—88 **30 Claims**

1. A battery container for a remotely-vented multi-cell battery comprising in combination:

a container base including side walls and a plurality of interior divider walls forming individual battery cell compartments therein;

enclosure means for the battery including a cover carried on said container, said cover including a bottom surface portion engaging the walls of said container base, and further including a recess on said bottom surface communicating with each of said cell compartments and with the exterior of the battery compartment; and

battery venting means including a gas collection manifold seated in said recess, said manifold communicating with



each of said cell compartments and with a discharge port opening to the exterior of the battery, and defining with said cover vapor-sealed engagement with said walls of said container base whereby vapor communication with said cell compartments is restricted to said manifold.

4,207,388

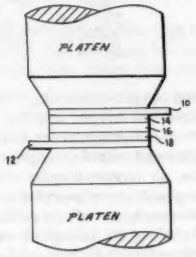
COPPER (II) CHLORIDE-TETRACHLOROALUMINATE BATTERY

John K. Erbacher, Fairborn, Ohio; Charles L. Hussey, University, Mich., and Lowell A. King, Colorado Springs, Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 29, 1978, Ser. No. 964,870

Int. Cl.[2] H01M 6/36

U.S. Cl. 429—112 **6 Claims**



1. A light weight, thermally activated pelletized reserve battery comprising:

(a) a solid anode composed of a material selected from the group consisting of lithium, aluminum and lithium-aluminum alloys;

(b) a solid cathode composed of a mixture of (1) Copper (II) Chloride, (2) graphite and (3) an equimolar mixture of aluminum chloride and sodium chloride; and

(c) a solid alkali tetrachloroaluminate electrolyte positioned between and in contact with said anode and said cathode.

4,207,389

SOLID STATE CELLS

Philip B. Gunther, Hastings-on-Hudson, and Robert Nikitopoulos, Carmel, both of N.Y., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

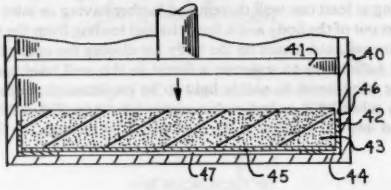
Division of Ser. No. 855,103, Nov. 25, 1977. This application Oct. 30, 1978, Ser. No. 956,478

Int. Cl.[2] H01M 2/02

U.S. Cl. 429—164 **8 Claims**

1. A solid state electrochemical cell comprising a solid anode, a solid cathode and, a solid electrolyte therebetween in a container and a rigid non-flexible wall retaining member between said container and said cathode which completely surrounds and directly retains the lateral walls of said cathode

wherein said cathode is subject to radial expansion during discharge of said cell, and said cathode having been pressure



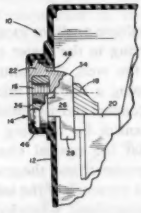
consolidated within said wall retaining member whereby radial expansion of said cathode is substantially contained thereby.

4,207,390

ONE PIECE BATTERY SIDE TERMINAL CONNECTOR

Willard J. Oehrlein, Milwaukee, and James C. Engman, Waukesha, both of Wis., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Nov. 2, 1978, Ser. No. 957,122
Int. Cl.[2] H01M *2/30*
U.S. Cl. 429—179 **10 Claims**



1. In a battery having a thin molded wall, a side terminal assembly comprising a continuous collar molded integrally with said wall and projecting outwardly therefrom and surrounding an opening through the wall, a one piece terminal having a head portion, a base portion extending through the opening and abutting the periphery thereof and a skirt portion spaced from the interior face of the wall, said base portion having a plurality of spaced keys engaging complementally shaped recesses in the periphery of the wall opening, sealing means positioned between the inner face of the head portion of the terminal and the outer face of the wall, the outward terminal portion of the collar being heat staked to the outer face of the head portion of the terminal to hold the terminal in position.

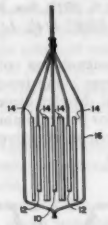
4,207,391

RECHARGEABLE ELECTRICAL STORAGE BATTERY WITH ZINC ANODE AND AQUEOUS ALKALINE ELECTROLYTE

Peter K. Church, Cascade, and Alan G. Phillips, Arvada, both of Colo., assignors to El-Chem Corporation, Cascade, Colo.

Filed Jul. 25, 1978, Ser. No. 927,927
Int. Cl.[2] H01M *4/42*
U.S. Cl. 429—229 **6 Claims**

1. A zinc containing battery anode comprised of finely divided electrochemically oxidized zinc metal particles supported on an electrically conductive current conductor, which particles are electrochemically oxidized in situ by electrically connecting said anode to a cathode immersed in an electrolyte until the cathode is substantially completely discharged as evidenced by the evolution of hydrogen gas therefrom and maintaining the electrical connection between the anode and cathode for a period of time sufficient to oxidize substantially



all of the zinc in the anode as evidenced by substantial cessation of hydrogen evolution at the cathode.

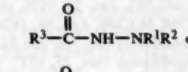
4,207,392

HEAT DEVELOPABLE AND STABILIZABLE PHOTOGRAPHIC MATERIALS AND PROCESS

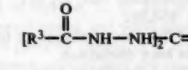
Daniel D. Shiao, Victor, and Lawrence R. Morrow, Churchville, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,678
Int. Cl.[2] G03C *5/38, 1/02*
U.S. Cl. 430—352 **23 Claims**

4. A process of developing and stabilizing an image in an exposed photographic element comprising a support having thereon, in binder, and in reactive association, (a) a photosensitive silver salt, (b) a photosensitive silver salt developing agent, and (c) a stabilizing concentration of an activator-stabilizer precursor consisting essentially of an acylhydrazine represented by the structure:



(I)

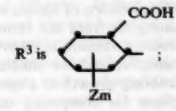


(II)

wherein

R^1 is hydrogen or alkyl containing 1 to 3 carbon atoms;

R^2 is —CO—R^4 or —SO_2—R^4;



Z is hydrogen or an electron withdrawing group;

m is 1 to 4; when Z is hydrogen, m is 4;

R^4 is alkyl containing 1 to 3 carbon atoms or hydroxyalkyl containing 1 to 4 carbon atoms

which releases a base moiety upon being heated to a temperature above about 130° C.; comprising heating said element to a temperature within the range of 130° C. to 200° C. until said image is developed and stabilized.

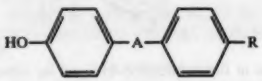
4,207,393

PHOTOGRAPHIC CONTRAST ENHANCERS

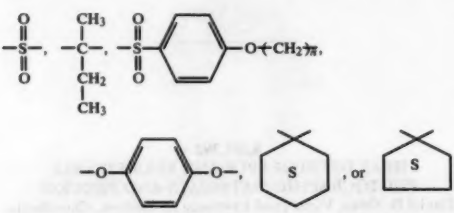
Warren L. Snyder, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 9, 1979, Ser. No. 19,103
Int. Cl.[2] G03C *1/40, 1/10, 7/00*
U.S. Cl. 430—546 11 Claims

11. An unexposed, undeveloped color photographic silver halide dispersion in a layer comprising a hydrophilic colloid, silver halide, and an oil droplet dispersion of a 1-phenyl-3-anilino-5-pyrazolone color photographic coupler, wherein said layer also contains therein an effective amount of a constrast enhancer of the formula



wherein A is selected from the group consisting of



wherein n is 1, 2, 3, or 4, and
R is H, OH, or alkyl of 1 or 3 carbon atoms.

4,207,394

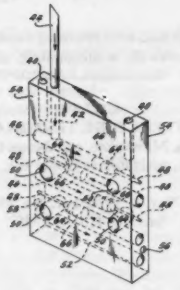
PROCESS AND APPARATUS FOR ANALYZING SPECIMENS FOR THE PRESENCE OF MICROORGANISMS THEREIN

Clifton Aldridge, Jr., Creve Coeur; Paul W. Jones, St. Charles; Sandra F. Gibson, St. Ann; Richard D. Vannest, St. Charles; James T. Holen, Florissant; George F. Keyser, St. Louis, all of Mo., and Michael C. Meyer, Belleville, Ill., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation of Ser. No. 652,991, Jan. 28, 1976, abandoned, which is a division of Ser. No. 461,249, Apr. 16, 1974, Pat. No. 3,963,355, which is a continuation of Ser. No. 255,533, May 22, 1972, abandoned. This application Nov. 25, 1977, Ser. No. 854,592
The portion of the term of this patent subsequent to Jun. 15, 1993, has been disclaimed.
Int. Cl.[2] C12Q *1/04;* C12M *1/18*
U.S. Cl. 435—34 8 Claims

1. A process for detecting and identifying a specific microorganism in a polymicrobic specimen taken directly from human excretion or secretion without producing cultures, said process comprising diluting the specimen of human excretion or secretion in water; evacuating air from the vicinity of a selective culture medium to create a vacuum in the vicinity of the culture medium, the selective culture medium comprising a source of nutrients favoring growth of a specific microorganism, an inhibitor system for competing microorganisms to avoid false positive responses, and a metabolically responsive indicator which causes the light-transmitting characteristics of the medium to change after dilution of the medium with water as the specific microorganism propagates in the medium; mixing the water-specimen mixture with the selective culture medium after the air is evacuated from the vicinity of the culture medium so as to form a diluent mixture; causing the specific microorganisms to propagate and inhibiting propagation of competing microorganisms; and examining the diluent mixture for a change in the optical characteristics thereof, said change in the optical characteristics indicating the presence of said specific microorganism in said polymicrobic specimen.

3. In combination with a cassette including a rigid body having at least one well therein and further having an inlet that opens out of the body and a flow channel leading from the inlet to the well, and means on the body for closing the ends of the well sufficiently to maintain a liquid in the well, said means being transparent to enable light to be projected through the well, whereby a polymicrobic water specimen that is introduced into the cassette at the inlet will flow through the flow



channel to the well; a culture medium located in the well and being capable of dispersing in the water specimen when the water specimen enters the well, the culture medium further being capable of sustaining a selected microorganism in the polymicrobic water specimen and indicating the presence of that selected microorganism by reacting with the selected microorganism such that the optical characteristics of the mixture of the water specimen and the culture medium will change in response to the presence of the selected microorganism, but not other microorganisms, whereby the light transmitting characteristics of the well change only when the selected microorganism is in the water specimen.

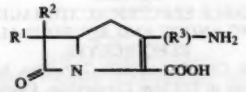
4,207,395

PROCESS FOR DEACYLATING N-ACYL-6-SUBSTITUTED-2-[2-AMINOETHYLTHIO]-1-CARBADETHIAPEN-2-EM-3-CARBOXYLIC ACIDS

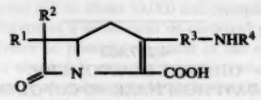
Patrick J. Cassidy, and Jean S. Kahan, both of Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Nov. 2, 1978, Ser. No. 956,951
Int. Cl.[2] C12P *17/18*
U.S. Cl. 435—119 6 Claims

1. A process for preparing a compound having the structure:



wherein R^1 and R^2 are independently selected from the group consisting of hydrogen; substituted and unsubstituted: alkyl having 1–6 carbon atoms; phenyl and phenylalkyl wherein the substituent is selected from hydroxyl, amino, and carboxyl; R^3-NH_2 is alkylamino having 1–6 carbon atoms, phenylamino, phenylalkylamino, thioalkylamino, and alkylphenylalkylamino (each alkyl having 1–6 carbon atoms), which comprises contacting the corresponding N-acyl species having the structure:



wherein R^4 is acyl, with an deacylating enzyme isolated from *Alcaligenes faecalis* ATCC 31444 capable of cleaving R^4; when R^2/R^1 is H and R^1/R^2 is 1-hydroxyethyl, $-R^3NHR^4$ is not

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4,207,396

CELLULOSE FERMENTATION PROCESS

Donald L. MacFadden, Bristol, Tenn., assignor to Chevron Research Company, San Francisco, Calif.

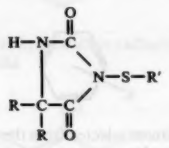
Division of Ser. No. 801,933, May 31, 1977, Pat. No. 4,101,679. This application May 4, 1978, Ser. No. 902,571

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.[2] A23K *1/12*

U.S. Cl. 435—244 **6 Claims**

1. A method for accelerating the rate of cellulose fermentation by cellulose-digesting microorganisms which comprises conducting said fermentation in the presence of a rate-accelerating amount of a compound of the formula



wherein R' is haloalkyl of 1 to 2 carbon atoms and 1 to 5 chloro or bromo groups and R individually is hydrogen or lower alkyl of 1 to 6 carbon atoms.

4,207,397

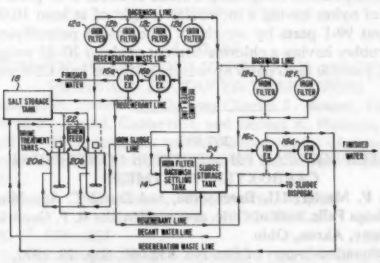
METHOD FOR RECOVERING AND TREATING BRINE FROM WATER SOFTENER REGENERATION

Stephen H. Davis, Dayton, Ohio, and James E. Etzel, Lafayette, Ind., assignors to Water Refining Company, Inc., Middletown, Ohio

Filed Sep. 15, 1978, Ser. No. 942,540

Int. Cl.[2] B01D *15/06*

U.S. Cl. 521—26 **4 Claims**



1. A closed-mode method for regenerating a water softener having a cation exchange resin bed located therein and for recovering and treating the regenerant brine from the water softener regeneration, comprising:

(a) backwashing said cation exchange resin bed,

(b) evacuating the liquid from said water softener,

(c) introducing a saturated brine of regenerating material selected from the group consisting of potassium chloride and sodium chloride into said water softener to a level of approximately 150% or greater of said cation exchange resin bed depth to produce regenerant wastes in the form of a calcium chloride and magnesium chloride containing regenerant brine,

(d) evacuating said regenerant brine from said resin bed and recovering a concentrated portion of said regenerant brine for further treatment,

(e) treating said regenerant brine with a treatment chemical selected from the group consisting of sodium carbonate, potassium carbonate, a mixture of potassium carbonate and potassium hydroxide, and a mixture of sodium carbonate and sodium hydroxide to produce a calcium and magnesium containing precipitate and a potassium chloride or sodium chloride containing supernatant,

(f) separating said precipitate from said supernatant,

(g) resaturating said supernatant with additional potassium chloride or sodium chloride regenerating material, and

(h) recycling said resaturated supernatant to said water softener at the time of further regeneration, whereby a closed system for water softening and water softener regenerating is achieved.

4,207,398

PROCESS FOR PREPARING PHYSICALLY STABLE QUATERNARY AMMONIUM ANION EXCHANGE RESINS BY CHLOROMETHYLATION AND AMINATION IN THE ABSENCE OF ADDITIONAL ORGANIC SOLVENT

Edward F. Riener, Cinnaminson, N.J., assignor to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 877,933, Feb. 15, 1978, abandoned, which is a continuation of Ser. No. 702,319, Jul. 2, 1976, abandoned. This application Sep. 27, 1978, Ser. No. 946,295

Int. Cl.[2] C08F *8/24*; B01D *15/04*

U.S. Cl. 521—31 **9 Claims**

1. A process for preparing an anion exchange resin comprising the steps of:

(a) preparing a crosslinked copolymer by polymerizing a monomer system comprising (i) from about 85 to 99.95 parts by weight of at least one non-polar, aromatic monovinyl hydrocarbon monomer selected from the class consisting of styrene, o-, m, and p-alkylstyrenes, o-, m-, and p-alkoxystyrenes, and vinyl naphthalene, (ii) from about 5 to 0.05 parts by weight of at least one polar functionally-substituted comonomer selected from the group consisting of methyl methacrylate, trimethylol propane trimethacrylate, acrylonitrile and isodecyl methacrylate; and (iii) from about 10 to 0 parts by weight of at least one polyvinyl aromatic hydrocarbon selected from the class consisting of divinyl benzene, divinyl alkyl benzenes, divinyl naphthalenes and trivinyl benzene;

(b) haloalkylating said copolymer in the presence of a Lewis acid catalyst wherein the haloalkylating agent is present in an excess quantity and is selected from the group consisting of mono-chloromethyl methyl ether and bis-chloromethyl ether;

(c) quenching the haloalkylation reaction, and washing the haloalkylated intermediate copolymer, with water;

(d) treating said intermediate copolymer in an aqueous slurry with a tertiary amine to give a quaternary anion exchange resin; and

(e) Carrying out steps (a) through (d) in the absence of added organic solvent whereby an anion exchange resin characterized by improved physical stability is obtained.

4,207,399

METHYLQUINOLINE HIGH POLYMER BASED ON QUATERNARY AMMONIUM POLYMERS

Hiroshi Kambara, Abiko, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 14, 1979, Ser. No. 20,285
Int. Cl.[2] C08L 39/04; C08F 8/32
U.S. Cl. 521—32 11 Claims

1. A high polymer prepared by reacting in the presence of an alkaline catalyst a crosslinked polymer having quaternary ammonium groups with a methylquinoline compound until all or a portion of said quaternary ammonium groups are reacted with said methylquinoline compound.

4,207,400

FOAMABLE RESOLE RESIN COMPOSITION

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 852,010, Nov. 16, 1977, abandoned. This application Jul. 24, 1978, Ser. No. 927,074
Int. Cl.[2] C08J 9/14
U.S. Cl. 521—112 26 Claims

1. An improved foamable resole resin composition curable to a non-corrosive, closed cell foam consisting essentially of a resole resin, a blowing agent and a surfactant, wherein the improvement comprises, having present in said composition dispersed metal powders selected from the group consisting of zinc, iron, magnesium, calcium and barium or mixtures thereof said blowing agent being a low boiling organic compound having a boiling point of about −30° to 125° C., selected from the group consisting of aliphatic hydrocarbons, halogenated hydrocarbon ethers and mixtures thereof, said metal powders acting as latent neutralizers, being present in said composition in amount sufficient to provide said composition with a pH of about 5 to 10 when foamed and cured with an acid catalyst.

4,207,401

FOAMABLE RESOLE RESIN COMPOSITION

Ronald H. Dahms, Springfield, Mass., assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 912,815, Jun. 5, 1978, abandoned. This application Feb. 1, 1979, Ser. No. 8,362
Int. Cl.[2] C08J 9/12, 9/14
U.S. Cl. 521—112 26 Claims

1. An improved foamable resole resin composition curable to a non-corrosive foam, comprising, a resole resin, a blowing agent and a surfactant, wherein the improvement comprises having present in said composition dispersed particles consisting of calcium oxide and having a particle size larger than 60 mesh.

4,207,402

FOAMABLE POLYMERIC ALLOY COMPOSITION

William E. Sprenkle, Jr., Wilbraham, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 30, 1978, Ser. No. 955,685
Int. Cl.[2] C08J 9/10, 9/08
U.S. Cl. 521—139 39 Claims

1. A foamable moldable polymeric alloy composition for structural foams consisting essentially of:

A. an addition polymer polyblend which comprises a mixture of a major amount of:
   1. a polymer of at least one alkenyl aromatic monomer, and a minor amount of:
   2. A grafted diene rubber, grafted with said alkenyl aromatic monomer,

B. an interpolymer of an alkenyl aromatic monomer and maleic anhydride, wherein the weight ratio of said addition polymer to said interpolymer in said alloy is about 85:15 to 50:50, and

C. a foaming agent selected from the group consisting of carbonates, bicarbonates, azo, hydrazides, hydrazines, azide and amide compounds, nitrogen, carbon dioxide or mixtures thereof.

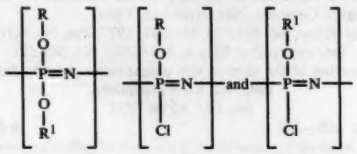
4,207,403

OIL-FREE ELASTOMERIC POLY(ARYLOXYPHOSPHAZENE) COPOLYMER FOAM

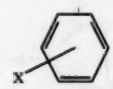
Tai C. Cheng, Akron; John W. Fieldhouse, Mogadore; Arthur E. Oberster, Canton, and Daniel F. Graves, Clinton, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 919,888, Jun. 28, 1978. This application Apr. 16, 1979, Ser. No. 30,598
Int. Cl.[2] C08G 79/02
U.S. Cl. 521—180 2 Claims

1. A foam composition comprising an oil-free elastomeric poly(aryloxyphosphazene) copolymer consisting essentially of randomly distributed repeating units represented by the formulas:



wherein R and R^1 may be the same or different and are selected from the group consisting of monovalent aryl radicals and substituted aryl radicals having the structure:



wherein X is a substituent selected from the group consisting of alkyl, alkoxy, aryl, aryloxy, amino and halogen substituted on any sterically permissible position on the phenyl group and the amount of Cl present in the form of P-Cl bonds is from about 0.4 percent to about 10.0 percent by weight based on the total weight of copolymer.

4,207,404

COMPOSITIONS OF CHLORINATED POLYETHYLENE RUBBER AND NYLON

Aubert Y. Coran, and Raman Patel, both of Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 6, 1978, Ser. No. 966,838
Int. Cl.[2] C08L 77/00
U.S. Cl. 525—184 22 Claims

1. A composition comprising a blend of about 1–99 parts by weight of nylon having a molecular weight of at least 10,000 and about 99-1 parts by weight of chlorinated polyethylene (CPE) rubber having a chlorine content of about 20–55 weight percent, per 100 total parts by weight of nylon and CPE rubber.

4,207,405

WATER-SOLUBLE PHOSPHORUS CONTAINING CARBOXYLIC POLYMERS

William F. Masler, III, Brecksville, and David C. Spaulding, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation-in-part of Ser. No. 835,660, Sep. 22, 1977, abandoned. This application May 3, 1978, Ser. No. 902,326
Int. Cl.[2] C08F 8/40
U.S. Cl. 525—328 18 Claims

1. A composition comprising the reaction product of a water

soluble carboxyl polymer having a molecular weight in the range from about 400 to about 10,000 and phosphorous acid or precursors thereof in a mole ratio of carboxyl groups in the carboxyl polymer to phosphorous acid in the range of from about 10:1 to about 1:1, **calculated as the ratio of titratable carboxyl groups to phosphorous acid, said reaction product being formed by heating said carboxyl polymer and phosphorus acid as a homogeneous reaction mass under anhydrous conditions in a suitable organic solvent medium, said reaction product including a polymer having both carboxyl and phosphonic acid groups, two phosphorus atoms being bound to a reacted carboxyl moiety by phosphorus-to-carbon bonds.**

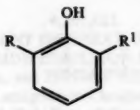
4,207,406

PROCESS FOR PREPARING POLYPHENYLENE OXIDE COPOLYMERS

Walter K. Olander, Mt. Vernon, Ind., assignor to General Electric Company, Pittsfield, Mass.

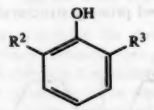
Filed May 9, 1978, Ser. No. 904,272
Int. Cl.[2] C08G *65/44, 65/48*
U.S. Cl. 525—391 **13 Claims**

1. A process of preparing copolymers of polyphenylene oxides which comprises contacting a phenol having the formula:



I

wherein R and R^1 are hydrocarbon radicals, with an α-alkenyl phenol of the formula:



II

wherein R^2 is selected from alkyl having from 1 to 6 carbon atoms and vinyl, and R^3 is an unsaturated hydrocarbon radical containing at least one polymerizable double bond in the hydrocarbon chain in the presence of a manganese (II) chelate complex catalyst having the formula $(L)_x$ Mn wherein L is a ligand derived from an ω-hydroxyoxime, Mn is the transition metal manganese (II) and x is a positive number at least equal to about 0.5, a solvent, a base and an oxygen containing gas and thereafter recovering the polyphenylene oxide copolymer from the reaction mixture.

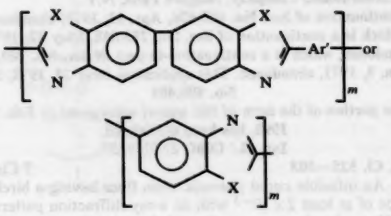
4,207,407

AROMATIC HETEROCYCLIC POLYMER ALLOYS AND PRODUCTS PRODUCED THEREFROM

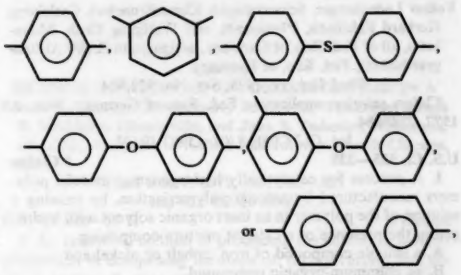
Thaddeus E. Helminiak, Dayton; Charles L. Benner, Fairborn; Fred E. Arnold, Centerville, and George E. Husman, Xenia, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed May 3, 1978, Ser. No. 902,525
Int. Cl.[2] C08L *79/06, 79/04*
U.S. Cl. 525—425 **12 Claims**

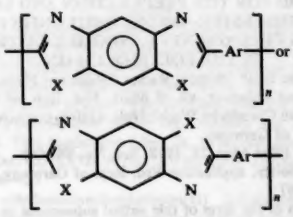
1. A polymeric alloy comprising a mixture of a flexible, coil-like heterocyclic polymer and a reinforcing amount of a rod-like aromatic heterocyclic polymer, the coil-like heterocyclic polymer consisting essentially of repeating units having the following structural formulas:



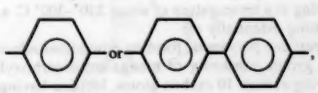
wherein X is NH, Nϕ, O or S, where ϕ is phenyl, Ar' is



and m is an integer having a value such that the polymer has an intrinsic viscosity of about 2 to 20 dl/g as determined in methanesulfonic acid at 30° C., and the rod-like aromatic heterocyclic polymer consisting essentially of repeating units having the following formulas:



where X is NH, Nϕ, O or S, where ϕ is phenyl, Ar is



and n is an integer having a value such that the polymer has an intrinsic viscosity of about 5 to 30 dl/g as determined in methanesulfonic acid at 30° C.

4,207,408

HIGH TENACITY PHENOLIC RESIN FIBERS

James Economy, Eggertsville; Francis J. Frechette, Tonawanda, and Luis C. Wohrer, Lewiston, all of N.Y., assignors to The Carborundum Company, Niagara Falls, N.Y.

Continuation of Ser. No. 460,636, Apr. 12, 1974, abandoned, which is a continuation of Ser. No. 255,858, May 22, 1972, abandoned, which is a continuation-in-part of Ser. No. 149,045, Jun. 1, 1971, abandoned. This application May 22, 1978, Ser. No. 908,481

The portion of the term of this patent subsequent to Feb. 13, 1990, has been disclaimed.

Int. Cl.[2] C08G *8/10, 8/28*

U.S. Cl. 525—503 7 Claims

1. An infusible cured phenolic resin fiber having a birefringence of at least 2×10^{-3} with an x-ray diffraction pattern of the fibers showing an amorphous halo, wherein at least about 50% of the phenolic hydroxyl groups of said resin are blocked.

4,207,409

CATALYTIC HYDROGENATION OF DIOLEFIN POLYMERS

Volker Ladenberger, Schwetzingen; Klaus Bronstert, Carlsberg; Gerhard Fahrbach, Plankstadt, and Wolfgang Groh, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 19, 1978, Ser. No. 952,804

Claims priority, application Fed. Rep. of Germany, Nov. 2, 1977, 2748884

Int. Cl.[2] C08F *8/04;* C08C *19/02*

U.S. Cl. 525—338 3 Claims

1. A process for catalytically hydrogenating diolefin polymers manufactured by anionic polymerization, by treating a solution of the polymer in an inert organic solvent with hydrogen in the presence of a catalyst mixture comprising

A. a soluble compound of iron, cobalt or nickel and

B. an aluminum-organic compound,

wherein the catalyst mixture in an inert solvent is added to the polymer solution to be hydrogenated, water is then added to the polymer solution in the amount of from 0.5 to 50 moles of water per mole of the soluble iron, cobalt or nickel compound, and the diolefin is hydrogenated in the presence of the water, whereby at least 90% of the olefinic double bonds are hydrogenated.

4,207,410

METHOD FOR THE PREPARATION AND USE OF POLYETHER ESTER AMIDES WITH UNITS OF THE STARTING COMPONENTS RANDOMLY DISTRIBUTED IN THE POLYMER CHAIN

Klaus Burzin; Salih Mumcu; Rainer Feldmann; Hans Jadamus, and Roland Feinauer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Mar. 21, 1978, Ser. No. 888,649

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2712987

The portion of the term of this patent subsequent to Jul. 18, 1995, has been disclaimed.

Int. Cl.[2] C08G *63/42*

U.S. Cl. 528—288 9 Claims

1. A method for the production of thermoplastic polyether ester amides having units of the starting components randomly distributed in the polymer chain, comprising:

(A) heating at a temperature of about 230°–300° C. a mixture consisting essentially of:

I. at least one polyamide forming compound selected from the group consisting of omega-aminocarboxylic acids having at least 10 carbon atoms, lactams having at least 10 carbon atoms, or omega-aminocarboxylic acids and lactams having at least 10 carbon atoms;

II. an alpha, omega-dihydroxy-(polytetrahydrofuran) having an average degree of polymerization of between about 2 and 42 or a molecular weight of between 160 and 3,000; and

III. at least one organic dicarboxylic acid; in a weight ratio of I to (II+III) of between 30:70 and 98:2, wherein hydroxy and carboxy groups in components II and III are present in equivalent amounts, in the presence of about 2–30% by weight of water, based on the polyamide-forming compounds of group I, under the internal pressure developed in a closed container and condensing a product;

(B) removing the water from the condensing stage (A); and

(C) completely condensing the product in a second condensing stage with the exclusion of oxygen under normal pressure or under reduced pressure at about 250°–280° C.

4,207,411

COPOLYAMIDE OF BRANCHED C_{10} DIAMINE, BIS(4-AMINOCYCLOHEXYL)-ALKANE, ISOPHTHALIC ACID AND TEREPHTHALIC ACID

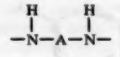
Robert S. Shue, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 22, 1975, Ser. No. 643,563

Int. Cl.[2] C08G *69/26*

U.S. Cl. 528—338 26 Claims

1. A normally solid, transparent, amorphous polyamide comprising: first diamine-derived primary structural units of the formula



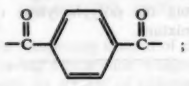
wherein

each A is individually selected from the group consisting of 5-methylnonamethylene, 2,4-dimethyloctamethylene, 2,4,6-trimethylheptamethylene and 4-isopropylheptamethylene;

second diamine-derived primary structural units of the formula

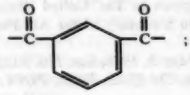
wherein each R is individually selected from the group consisting of hydrogen and methyl;

first diacid-derived primary structural units of the formula



and

second diacid-derived primary structural units of the formula



the nitrogen atoms provided by the sum of said first diamine-derived primary structural units and said second diamine-derived primary structural units constituting at least 95 percent, by number, of the total nitrogen atoms in said polyamide;

the carbonyl groups provided by the sum of said first diacid-derived primary structural units and said second diacid-derived primary structural units constituting at least 95 percent, by number, of the total carbonyl groups in said polyamide;

said second diamine-derived primary structural units constituting at least 15 percent, by number, but less than (80−0.5X) percent, by number, of the total of said first diamine-derived primary structural units and said second diamine-derived primary structural units where X is the percent, by number, of said first diacid-derived primary structural units in the total of said first diacid-derived primary structural units and said second diacid-derived primary structural units;

said first diacid-derived primary structural units constituting at least 15 percent, by number, but less than (50+Y) percent, by number, of the total of said first diacid-derived primary structural units and said second diacid-derived primary structural units, wherein Y is the percent, by number, of said second diamine-derived primary structural units in the total of said first diamine-derived primary structural units and said second diamine-derived primary structural units;

said polyamide having an inherent viscosity of at least 0.6 as measured at 30° C. in a m-cresol solution having a polymer concentration of 0.5 gram/100 milliliters solution.

4,207,412

AFTERTREATMENT OF SPRAY DRIED, POWDERED VINYL CHLORIDE EMULSION POLYMERIZATES

Josef Kalka, Herten, and Hermann Winter, Marl, both of Fed. Rep. of Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Filed Sep. 13, 1976, Ser. No. 722,400

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1975, 2541013

Int. Cl.² C08F *6/14*

U.S. Cl. 528—499 **1 Claim**

1. A process for improving the rheological properties of powdered polymerizates formable into plastisols, produced by polymerizing vinyl chloride or a mixture of vinyl chloride and a copolymerizable monomer in an aqueous emulsion in the presence of a water-soluble catalyst and an alkali salt of a fatty acid as the polymerization emulsifier and spray drying the resultant polymerizate, which comprises treating the powdered polymerizate for about 10–30 minutes with water in a weight ratio of powder to water of from 1:3 to 1:10 and then drying the water-treated powder, wherein the powdered polymerizate is treated with water for about 10–30 minutes at a temperature of about 15°–50° C.

4,207,413

L-SUCROSE AND PROCESS FOR PRODUCING SAME

Walter A. Szarek, Kingston, Canada, and John K. N. Jones, deceased, late of Kingston, Canada (by Marjorie I. Jones, executrix), assignors to Queen's University at Kingston, Kingston, Canada

Filed Apr. 13, 1978, Ser. No. 895,922

Claims priority, application Canada, Apr. 22, 1977, 276796

Int. Cl.² C07H *3/04*

U.S. Cl. 536—1 **1 Claim**

1. β-L-fructofuranosyl α-L-glucopyranoside.

4,207,414

POLYSACCHARIDE ANTIGENS

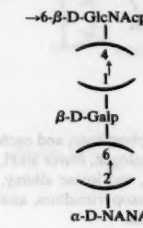
Dennis L. Kasper, Newton Center, Mass., assignor to President and Fellows of Harvard College, Cambridge, Mass.

Filed Aug. 16, 1978, Ser. No. 934,214

Int. Cl.² C08B *37/00*; A61K *31/71*

U.S. Cl. 536—1 **2 Claims**

1. A polysaccharide antigen in purified form specific to Type III Group B streptococci consisting essentially of repeating units having the following composition:



in which GlcNAcp stands for N-acetyl glucosamine (in the pyranose form), Galp stands for galactose (in the pyranose form), Glcp stands for glucose (in the pyranose form) and α-D-NANA stands for sialic acid, said polysaccharide having a molecular size from 0.8×10^6 to 6×10^6 daltons.

4,207,415

METHOD OF PRODUCING 2-DEOXYFORTIMICIN A

Ronald E. Carney, Gurnee; Jerry R. Martin, Waukegan; James B. McAlpine, Libertyville, and John S. Tadanier, Waukegan, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 5, 1979, Ser. No. 9,637

Int. Cl.² C07H *15/22*

U.S. Cl. 536—17 R **8 Claims**

1. An improved method of producing the antibiotic 2-deoxyfortimicin A comprising the steps of: (a) converting fortimicin A having all primary amino groups blocked to the corresponding per-N-blocked 2-O-thiocarbonylimidazolide; (b) converting said imidazolide derivative to 2-deoxy-tetra-N-benzyloxycarbonylfortimicin A and (c) subjecting said 2-deoxy-N-benzyloxycarbonylfortimicin A to catalytic hydrogenolysis to obtain 2-deoxyfortimicin A.

4,207,416

ETHYLENEDIAMINEPLATINUM(II) 2,4-DIOXOPYRIMIDINE COMPLEXES

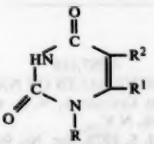
James D. Hoeschele, Piscataway, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Iselin, N.J.

Division of Ser. No. 651,141, Jan. 21, 1976, Pat. No. 4,080,324, which is a continuation of Ser. No. 503,585, Sep. 5, 1974, abandoned. This application Mar. 21, 1978, Ser. No. 888,802

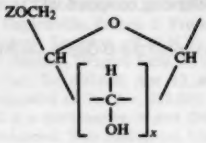
Int. Cl.² C07H *19/06, 19/10*; C07F *15/00*

U.S. Cl. 536—23 **6 Claims**

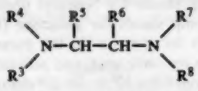
1. An ethylenediamineplatinum(II) 2,4-dioxopyrimidine complex consisting of a 2,4-dioxopyrimidine moiety and an ethylenediamineplatinum(II) moiety wherein the 2,4-dioxopyrimidine moiety has the formula:



wherein R is a saccharide moiety which is the residue of a pentose or hexose having the formula:



wherein x=2 or 3 when Z is hydrogen or phosphato, and each of R^1 and R^2, independently is hydrogen, halogen, lower alkyl, carboxyl, lower alkoxycarbonyl, hydroxy, and lower alkoxy, and the dihydro derivatives of said 2,4-dioxopyrimidines, and the ethylenediamine moiety has the formula:



wherein each of R^3, R^4, R^5, R^6, R^7 and R^8, when taken separately, is hydrogen or lower alkyl, the ultraviolet spectrum of said complex being characterized by absorption maxima at about 200 nm and about 288 nm and an absorption minimum at about 254 nm.

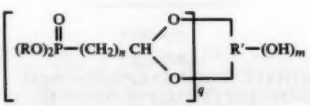
4,207,417

PHOSPHORUS CONTAINING POLYOLS

David Vofsi; Martin M. Halmann, and Saul Yanai, all of Rehovot, Israel, assignors to Yeda Research & Development Co. Ltd., Rehovot, Israel

Filed Dec. 8, 1977, Ser. No. 858,901
Claims priority, application Israel, Dec. 28, 1976, 51178
Int. Cl.[2] C07H *13/00*
U.S. Cl. 536—117 **10 Claims**

1. Polyhydroxylated O,O-dialkyl phosphonoacetals having the formula



wherein

R is an alkyl group having from 1–3 carbon atoms;

n is an integer from 1–2;

q is an integer from 1–3;

R′ is a residue of a polyhydroxy compound having from 5–12 carbon atoms;

m is an integer from 0–6.

6. Compounds according to claim 4 wherein R′ is a residue of mannose.

4,207,418

1,2-ETHANEDIAMINE SALTS OF NALIDIXIC ACID

Denis M. Bailey, East Greenbush, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Filed Oct. 5, 1978, Ser. No. 948,956
Int. Cl.[2] C07D *471/04*
U.S. Cl. 546—123 **3 Claims**

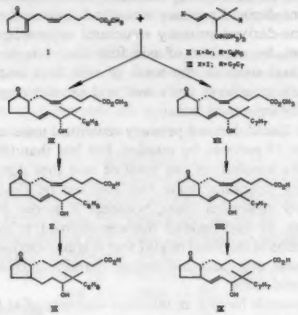
1. A salt of 1,2-ethanediamine and nalidixic acid.

4,207,419

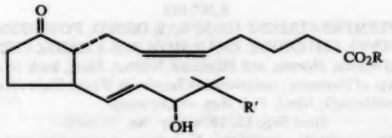
PROSTAGLANDIN DERIVATIVES

Wenling Kao, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Jan. 13, 1977, Ser. No. 759,314
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—53 **6 Claims**



1. A chemical compound of the structure:



wherein R is alkyl of from 1 to 6 carbon atoms, and R^1 is phenyl.

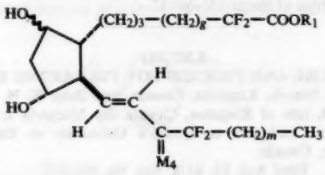
4,207,420

2,2-DIFLUORO-PGF$_1$ ANALOGS

Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 552,708, Feb. 24, 1975, Pat. No. 4,001,300.
This application Sep. 17, 1976, Ser. No. 724,160
Int. Cl.[2] C07C *177/00*
U.S. Cl. 560—121 **6 Claims**

1. A compound of the formula



or a mixture comprising that compound and the entiomer thereof,

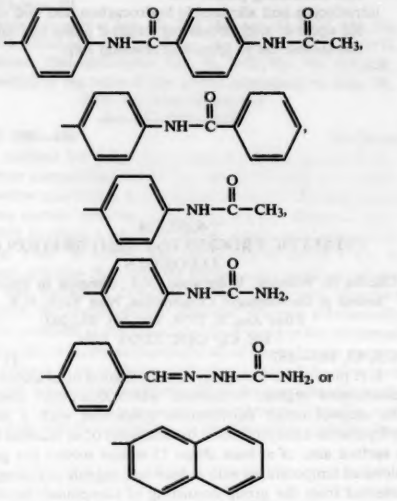
wherein g is 2 to 4, inclusive;

wherein M_4 is

wherein m is 2 to 4, inclusive,

wherein R_1 is hydrogen, alkyl or one to 12 carbon atoms, inclusive, cycloakyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, phenyl

substituted with one, 2, or 3 chloro, alkyl of one to 4 carbon atoms, inclusive, or a pharmacologically acceptable cation,



4,207,421

BIODEGRADABLE, ALKALI STABLE, NON-IONIC SURFACTANTS

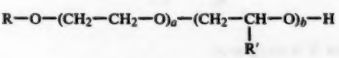
Michael Scardera, Hamden, and Frank R. Grosser, Bethany, both of Conn., assignors to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 853,607, Nov. 21, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,698

Int. Cl.[2] **C07C** *43/04;* **B01F** *17/00, 17/42;* **C11D** *1/72*

U.S. Cl. 568—625 **10 Claims**

1. A surfactant product having the formula:



wherein R is a linear alkyl hydrocarbon radical having an average of about 16 to 18 carbon atoms; R′ is an alkyl radical selected from methyl and ethyl; a is an integer having a value of about 9 to 15; b is an integer having a value of about 2 to 5; and the ratio of a:b is from 2.7:1 to 3.5:1.

4,207,422

2-DECARBOXY-2-HYDROXYMETHYL-3,7-INTER-M-PHENYLENE-13,14-DIDEHYDRO-PGA, PGD, AND PGE COMPOUNDS

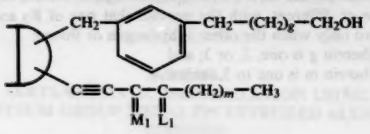
Herman W. Smith, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 814,500, Jul. 11, 1977, Pat. No. 4,134,921, which is a division of Ser. No. 708,752, Jul. 26, 1976, Pat. No. 4,058,564. This application Feb. 24, 1978, Ser. No. 880,738

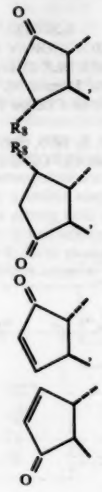
Int. Cl.[2] **G07C** *49/82*

U.S. Cl. 568—807 **65 Claims**

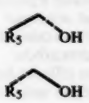
1. A prostaglandin analog of the formula



wherein D is



wherein R_8 is hydrogen or hydroxy;
wherein M_1 is



or

wherein R_5 is hydrogen or methyl;
wherein L_1 is

or a mixture of

and

wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;

wherein g is one, 2, or 3; and

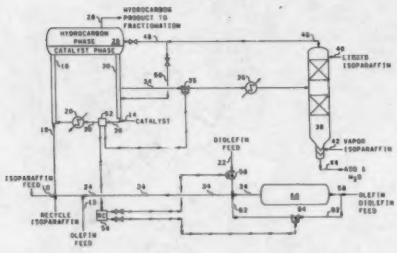
wherein m is one to 5, inclusive.

4,207,423

ACID TYPE HYDROCARBON ALKYLATION WITH ACID-SOLUBLE OIL ADDITION

Donald J. Makovec, and Donald M. Haskell, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Apr. 5, 1979, Ser. No. 27,425
Int. Cl.[2] C07C 3/54
U.S. Cl. 585—332 **28 Claims**



1. A continuous process for the alkylation of an alkylatable hydrocarbon with an alkylating agent in the presence of an acid-type catalyst, comprising;

contacting said alkylatable hydrocarbon with said alkylating agent and with said acid-type catalyst at a temperature and a pressure and for a contact time sufficient to alkylate said alkylatable hydrocarbon;

separating the reaction effluent from said contacting into an alkylate product phase and a catalyst phase containing catalyst-soluble oil;

cooling said catalyst phase to a temperature essentially equal to the contacting temperature;

recycling said cooled catalyst phase to said contacting; and

maintaining a predetermined concentration of catalyst-soluble oil in said catalyst phase by at least periodically contacting a diolefinic hydrocarbon with an acid-type catalyst under conditions sufficient to form additional catalyst-soluble oil and combining said additional catalyst-soluble oil with said recycling catalyst phase.

15. A method for starting up a process for alkylating an alkylatable hydrocarbon with an alkylating agent, in which the alkylating agent and alkylatable hydrocarbon are reacted in the presence of an acid-type catalyst at a, temperature and pressure and for a time sufficient to alkylate said alkylatable hydrocarbon, the alkylation reaction effluent is separated into an alkylate product phase and a recycle catalyst phase, said recycle catalyst phase is cooled and said cooled recycle catalyst phase is recycled to said reaction step, comprising;

circulating said catalyst through said reaction step, at reaction conditions, through said separation step and through said recycle step to establish a cyclically circulating catalyst phase;

contacting at least one diolefinic hydrocarbon with an acid-type catalyst under conditions sufficient to form catalyst-soluble oil; and

combining said catalyst-soluble oil from said contacting with said circulating phase, and

introducing said alkylatable hydrocarbon and said alkylatable agent to said circulating catalyst phase and said catalyst-soluble oil to form said reaction step.

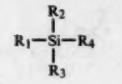
4,207,424

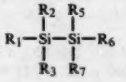
CATALYTIC PROCESS FOR DEHYDRATION OF ALCOHOLS

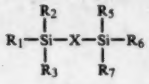
Charles N. Winnick, Ridgewood, N.J., assignor to Halcon Research & Development Corporation, New York, N.Y.

Filed Aug. 9, 1978, Ser. No. 932,243
Int. Cl.[2] C07C 15/00, 1/24
U.S. Cl. 585—357 **11 Claims**

1. A process for the catalytic dehydration of an alcohol to an unsaturated organic compound which comprises contacting the alcohol under dehydration conditions with a silylated dehydration catalyst formed by treatment of an alumina having a surface area of at least about 15 square meters per gram at elevated temperatures with at least one organic silylating agent selected from the group consisting of compounds having the formula:


(I)


(II), or


(III)

wherein X is oxygen or

and R_1, R_2, R_3, R_4, R_5, R_6 and R_7 are independently selected from the group consisting of hydrogen, hydroxy, halogen, alkoxy of from 1 to 8 carbon atoms, alkyl of from 1 to 8 carbon atoms, aryl of from 6 to 12 carbon atoms, alkenyl of from 2 to 8 carbon atoms, alkyl-substituted aryloxy having a total of from 7 to 12 carbon atoms, aryloxy of from 6 to 12 carbon atoms, aryl-substituted alkoxy of from 7 to 12 carbon atoms, alkaryl and aralkyl of from 7 to 12 carbon atoms, amino, acyl of from 1 to 8 carbon atoms and acyloxy of from 1 to 8 carbon atoms, with the proviso that at least one of R_1, R_2, R_3, R_4, R_5, R_6 and R_7 must be alkyl, aryl, aralkyl, alkaryl, alkenyl or acyl, and with the further proviso that if the silicon compound is characterized by formula (I) or (II) above, at least one or R_1, R_2, R_3, R_4, R_5, R_6 and R_7 must be hydroxy, halo, alkoxy, alkyl-substituted aryloxy, aryl-substituted alkoxy, aryloxy, amino, acyloxy, or cycloalkoxy.

4,207,425

DEHYDROGENATION METHOD AND NONACIDIC MULTIMETALLIC CATALYTIC COMPOSITE FOR USE THEREIN

George J. Antos, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 786,744, Apr. 11, 1977, Pat. No. 4,110,201, which is a division of Ser. No. 621,718, Oct. 14, 1975, abandoned. This application Aug. 24, 1978, Ser. No. 936,428
The portion of the term of this patent subsequent to Aug. 29, 1995, has been disclaimed.
Int. Cl.[2] C07C *5/36*
U.S. Cl. 585—434 20 Claims

1. A method for dehydrogenating a dehydrogenatable hydrocarbon comprising contacting the hydrocarbon, at dehydrogenation conditions, with a catalytic composite comprising a porous carrier material containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, about 0.05 to about 5 wt. % cobalt, and about 0.01 to about 5 wt. % cadmium; wherein the platinum group, catalytically available cobalt and cadmium components are uniformly dispersed throughout the porous carrier material; wherein substantially all of the platinum group component is present in the elemental metallic state; wherein substantially all of the cadmium component is present in an oxidation state above that of the elemental metal; and wherein substantially all of the catalytically available cobalt component is present in the elemental metallic state or in a state which is reducible to the elemental metallic state under dehydrogenation conditions or in a mixture of these states.

4,207,426

ALKYLAROMATIC ISOMERIZATION USING PLATINUM GROUP METAL ON EXTRUDED ALUMINA SUPPORT

Roy T. Mitsche, Wauconda, and George N. Pope, McHenry, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 921,159, Jun. 30, 1978, Pat. No. 4,149,889, which is a continuation-in-part of Ser. No. 788,376, Apr. 18, 1977, Pat. No. 4,098,874. This application May 16, 1979, Ser. No. 39,631
Int. Cl.[2] C07C *5/24, 15/08*
U.S. Cl. 585—482 17 Claims

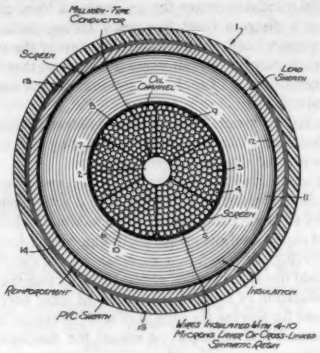
1. A process for isomerizing an isomerizable alkylaromatic hydrocarbon which comprises contacting said alkylaromatic hydrocarbon, at isomerization conditions, with a catalytic composite comprising a combination of a platinum group metal component and an alumina support wherein said support is prepared by admixing a finely divided alpha-alumina monohydrate with an aqueous ammonical solution having a pH of at least about 7.5 to form a stable suspension, commingling a catalytic metal salt of a strong acid with said suspension to form the suspension into an extrudable paste or dough, extruding said paste or dough to form an extrudate, drying and calcining said extruded alumina support.

4,207,427

ELECTRICAL POWER CABLE WITH STRANDED INSULATED WIRES

Germano Beretta, Monza; Cesare Seveso, Cinisello, and Giulio Tuci, Milan, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Filed Mar. 15, 1978, Ser. No. 886,630
Claims priority, application Italy, Mar. 16, 1977, 21277 A/77
Int. Cl.[2] H01B 7/30
U.S. Cl. 174—26 R 6 Claims



1. In a power cable comprising a Millikentype conductor comprising at least four sector-shaped conductive elements, said conductor being paper-insulated and oil-filled, each of said conductive elements comprising conductive metal wires stranded together, each of said wires having an insulating covering which provides a contact resistance radially which is high with respect to the longitudinal resistance of said wires for reducing current flow from wire to wire, an improved insulating covering which is a cross-linked synthetic resin having a thickness in the range from 4 to 10 microns, a thermal classification of at least 120° C., i.e. resists breakdown for at least 20,000 hours when subjected to a temperature of 120° C., a resistance to bidirectional abrasion at least equal to 50 cycles in accordance with Comitato Elettrotecnico Italiano Standard No. 55.1, a value of thermal pressure higher than 170° C. in accordance with Comitato Elettrotecnico Italiano Standard No. 55.1, and a contamination effect on fluid oil which is substantially nil, said resin being substantially completely volatizable by heating at temperatures encountered with the welding of the conductor of one such cable to the conductor of another such cable and said resin being a polyvinyl-acetal resin cross-linked with a phenol-aldehyde resin and, optionally, a melamine resin in percentages by weight in the range from 10 and 80 parts of the phenol-aldehyde resin, 0 and 15 parts of the melamine resin and 100 parts by weight of said polyvinylacetal resin.

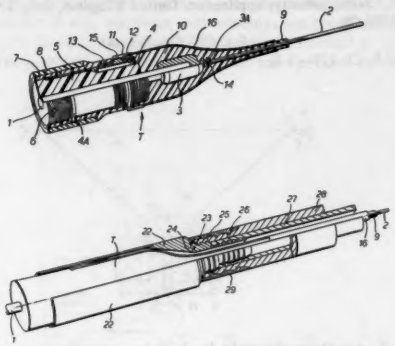
4,207,428

TELECOMMUNICATIONS SUBMARINE CABLE ASSEMBLIES

James E. H. Cosier, Woodbridge, and Peter D. Jenkins, Framlingham, both of England, assignors to The Post Office, London, England

Filed Jun. 13, 1978, Ser. No. 915,298
Claims priority, application United Kingdom, Jun. 16, 1977, 25219/77
Int. Cl.[2] H02G 15/14
U.S. Cl. 174—70 S 11 Claims

1. A submarine telecommunications cable assembly including a section of a main submarine telecommunications cable electrically connected to a short length of cable extending from a repeater housing, the section of main cable being armoured at least in the proximity of the repeater, wherein the electrical connection of the section of main cable to the short length of cable extending from the repeater housing is positioned at a location spaced from the repeater housing, strengthening means are provided along said short length of cable, the strengthening means substantially increasing the flexural rigidity of said short length of cable to a value greater than the flexural rigidity of the section of main cable, and the armouring of the section of main cable extends over the short length of cable and the strengthening means and is anchored to the repeater housing.

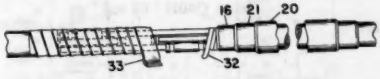


4,207,429

CABLE SPLICING TECHNIQUE

Robert A. Ward, Lexington, Mass., assignor to Plymouth Rubber Company, Inc., Canton, Mass.

Filed Sep. 20, 1978, Ser. No. 944,161
Int. Cl.[2] H02G 15/08, 15/18; H01R 43/00
U.S. Cl. 174—88 R 7 Claims



3. A cable splice for an electrical cable housing at least one insulated and jacketed conductor comprising:

a connector joining the confronting exposed ends of each conductor being joined;

a self-fusing insulative pad of rubber wrapped around the connector and exposed ends of each joined conductor and around the ends of the conductor insulation to electrically insulate each conductor;

a first layer of uncured vulcanizable rubber tape wound over the thus insulated conductors between the ends of the cable jacket;

a layer of cement over the jacket ends;

a second layer of uncured vulcanizable rubber tape over the splice area and over the cemented jacket ends;

a layer of cement over said second layer;

a molded fabric reinforced rubber jacket sleeve over the cemented splice area; and

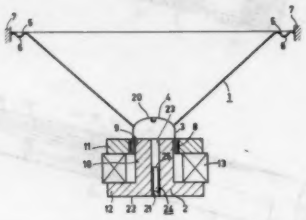
a layer of tape between each end of the jacket sleeve and the confronting portion of the cable jacket.

4,207,430

OPTICAL MOTIONAL FEEDBACK

Masaki Harada, Yao, and Tokuhiro Mikami, Yawata, both of Japan, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,408
Claims priority, application United Kingdom, Jan. 27, 1978, 3372/78
Int. Cl.[2] H04R *3/00*
U.S. Cl. 179—1 F **9 Claims**



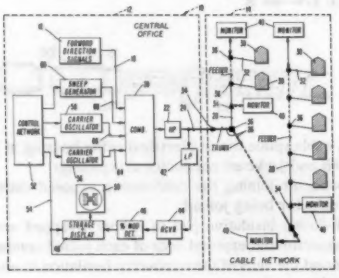
1. An electrodynamic loudspeaker comprising, a magnet system, a diaphragm which cooperates with said magnet system by means of a moving coil connected to said diaphragm, an optical measuring system which comprises a light source element and a detector element, at least one of said elements being connected to a central portion of the magnet system and the other element being connected to the diaphragm, and wherein the magnet system includes a channel which is disposed in the direct path between the light source and the detector elements whereby the detector element supplies a voltage which substantially corrresponds to the displacement of the diaphragm.

4,207,431

APPARATUS AND METHOD FOR MONITORING A COMMUNICATIONS SYSTEM

David S. McVoy, Columbus, Ohio, assignor to Broadband Technologies, Inc., Sarasota, Fla.

Filed Sep. 23, 1977, Ser. No. 835,981
Int. Cl.[2] H04B *17/00*
U.S. Cl. 179—1 MN **7 Claims**



1. Apparatus for monitoring a communication system in which information signals are transmitted within a particular frequency band, comprising, in combination:

means generating test signals falling within said particular frequency band for transmission over the communication system simultaneously with the information signals, said test signal generating means including first oscillator means generating as a first output a carrier signal at a first fixed frequency within said frequency band, second oscillator means generating as a second output a signal swept across at least a portion of said frequency band, and control means coupled to said first and second oscillator means for determining the particular output of said test signal generating means;

a plurality of monitor circuits each in communicative connection with said test signal generating means and each disposed at different preselected points in the system, each said monitor circuit including:

detector means for detecting all signals in said frequency band as received at the respective point of said monitor circuit,

local oscillator means for generating a local carrier signal at a discrete fixed frequency falling outside said frequency band, the carrier frequency of the oscillator of each monitor circuit being different so that the identity and location of each said monitor circuit can be recognized, and

modulator means coupled to said detector means and said local oscillator means for modulating said local carrier with said detected signals; and

signal analysis means in communicative connection with said monitor circuits and disposed at a position remote therefrom to receive and analyze said modulated local carriers, said signal analysis means including means for selectively receiving the individual modulated local carriers of each of said monitor circuits, means for detecting the percent of modulation of each of said received local carrier signals, means for storing the output of said percent of modulation detector, and oscilloscope means for displaying the frequency response of each received local carrier signal;

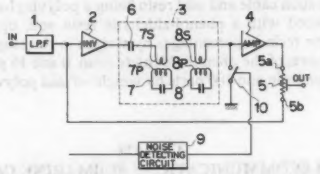
the amplitudes of said test signals generated by said first and second oscillator means being greater than said information signals such that modulated local carrier signals received by said signal analysis means and resulting from the transmission of either of said test signals may be differentiated from received modulated local carrier signals resulting from the transmission of information signals, whereby the operative status of the entire system may be monitored at a central location.

4,207,432

NOISE ELIMINATING SYSTEM

Kiyoshi Amazawa, and Masaharu Mori, both of Toda, Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Dec. 1, 1977, Ser. No. 856,578
Claims priority, application Japan, Feb. 12, 1976, 51-144902
Int. Cl.[2] H04H *5/00*; H04B *1/10*
U.S. Cl. 179—1 GD **7 Claims**



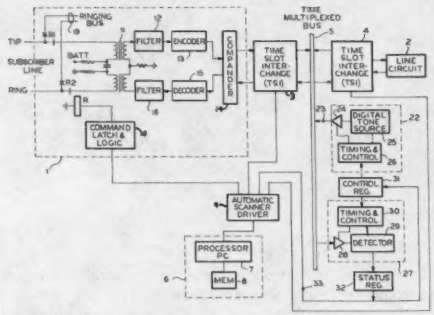
1. A noise eliminating system comprising first and second signal paths having separate output terminals and a common input terminal to which is applied an input signal including desired signal components and sometimes unwanted short duration noise pulse components; desired signal component blocking means provided in said first signal path and receiving said input signal; switching means connected to said first signal path having a first switching condition in the absence of noise pulse components in said input signal and a second switching condition in the presence of noise pulse components in said input signal wherein said switching means cooperates with said desired signal component blocking means in said first switching condition to prevent said input signal from appearing at the output terminal of said first signal path; noise detecting means

responsive to the noise pulse components in said input signal for operating said switching means into said second switching condition during each noise pulse component which removes said first switching condition, said blocking means then blocking only the desired signal components of the input signal in said first signal path during each noise pulse component so that only the noise pulse components in said input signal present in said first signal path appear at the output terminal thereof, said input signal passing through said second path to said output terminal thereof without cancellation of any components thereof; and means for combining the signals at the output terminals of said first and second signal paths so that the noise pulse components at the output terminals of said first and second signal paths are cancelled out, leaving the desired signal components in said second signal path at a common output terminal thereof.

4,207,433
TEST ARRANGEMENT FOR COMMUNICATION PATHS IN TIME-DIVISION MULTIPLEXED SWITCHING SYSTEMS

William G. Bartholomay, Chicago; Gordon W. Couturier, St. Charles, both of Ill.; Suhas Ghosh, San Jose, Calif., and Melvin Winn, Boca Raton, Fla., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,206
Int. Cl.² H04J 3/14
U.S. Cl. 370—13 **10 Claims**



1. A testing arrangement for a time-division multiplexed switching system, said system including a plurality of lines, a time-division bus, and means for selectively coupling each of said plurality of lines to receive and transmit time slots of said time-division bus, said testing arrangement comprising:

means for selecting one of said plurality of lines for testing;

means for generating test signals during a receive time slot associated with one of said selected line;

means for altering the transmission characteristics of said selected line such that at least a portion of each of said test signals is reflected onto a transmit time slot associated with said selected line; and

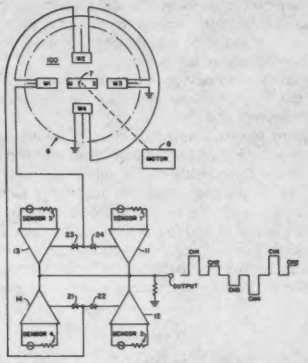
means for receiving said reflected portion of said signals during said transmit time slot.

4,207,434
INTEGRAL ELECTRIC GENERATOR, MULTIPLEXER, DATA ACQUISITION SYSTEM

Leon H. Riley, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 17, 1978, Ser. No. 896,849
Int. Cl.² H04J 3/00
U.S. Cl. 370—112 **4 Claims**

1. A system comprising a generating means having a plurality of windings; a rotating means in said generating means being adapted for rotation such that voltage will be generated in said windings in a sequential manner; a plurality of gating means; a plurality of connecting means connected between said windings and gating means such that said gating means will be triggered in a sequential manner in accordance with the voltage induced in said windings; said windings are connected in pairs such that their voltages will add when presented to said connecting means; said windings are two pairs in number; said

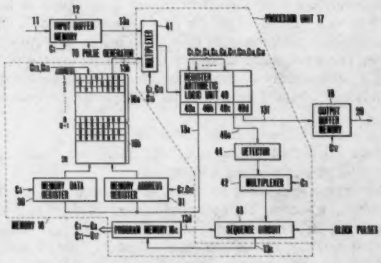


connecting means being two pairs of diodes each connected in series; said gating means consisting of first, second, third and fourth gating means each having a gate control terminal, an output terminal and an input terminal; said pairs of diodes being connected across said first and second gating means control terminals and said third and fourth gating means control terminals respectively; a common connection; and said pairs of windings being connected to a point between said pairs of diodes and said common connection.

4,207,435
CHANNEL TRANSLATORS FOR USE IN TIME DIVISION DIGITAL EXCHANGERS

Keiji Okada, Nagasaki, and Kohei Habara, Kokubunji, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Japan

Filed Aug. 8, 1978, Ser. No. 932,134
Claims priority, application Japan, Aug. 8, 1977, 52-94821
Int. Cl.² H04Q 11/04
U.S. Cl. 370—68 **8 Claims**



1. A channel translator for use in a time division digital exchanger of the type wherein digital information containing digitized voice information assigned to a predetermined channel of a first time division multiplexed digital transmission line is reassigned to any channel of a second digital transmission line thereby effecting telephone exchange, said channel translator comprising:

an input buffer memory device for temporarily storing digital information received from the first digital transmission line;

a speech data memory device for storing the digital information previously stored in said input buffer memory device;

a control memory device for storing channel translation control information which is used to effect channel translation of said digital information stored in said speech data memory device;

an output buffer memory device for temporarily storing digital information read out from said speech data memory device and then sending said digital information to said second transmission line;

a program memory device for storing a program for controlling the operational sequence of the various circuit elements described above;

a processor means adapted to directly access each of said memory devices under the control of said program memory device for reading digital information stored in said input buffer memory device to transfer it to said speech data memory device in synchronism with said predetermined channel of said first digital transmission line and for transferring said digital information from said speech data memory device to said output buffer memory device; and

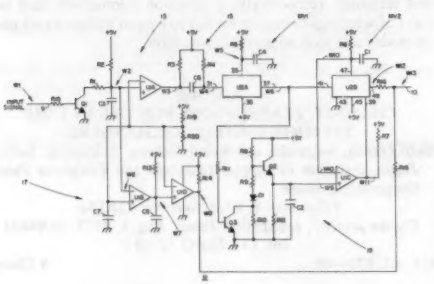
means for electrically connecting said circuit elements.

4,207,436

CONSTANT PERCENT BREAK TYPE DIAL PULSE CORRECTOR

Nam Tosuntikool, and Robert Yapp, both of San Jose, Calif., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Jul. 26, 1978, Ser. No. 928,117
Int. Cl.[2] H04Q *1/36*
U.S. Cl. 179—16 EA **13 Claims**



1. A pulse corrector circuit receiving a sequence of input pulses having a variable input duty factor and a variable input pulse repetition frequency (PRF), and being operative for repeating the input pulse sequence as corrected output pulses having a substantially constant duty factor and a repetition frequency substantially equal to that of input pulses comprising:

first means responsive to initiation of each input pulse for producing a first timing signal establishing a first timing interval of a prescribed length;

second means responsive to initiation of each input pulse for initiating a second timing signal having an amplitude that may vary in one direction from a first prescribed value at a first rate set by an associated first RC time constant which is constant;

third means responsive to termination of the first time interval for initiating a third timing signal establishing a third time interval and having an amplitude which may vary in a direction opposite to the one direction from a second prescribed value at a second rate set by an associated second RC time constant which is also fixed; and

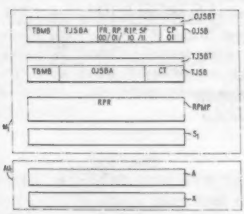
fourth means responsive to the end of the first time interval associated with one input for initiating an output pulse and being responsive to a prescribed difference between the values of the amplitudes of said third timing signal and said second timing signal initiated in response to receipt of the one and next input pulses for terminating the output pulse, the times at which said first and second means initiate timing signals varying as a function of the pulse repetition frequency of input pulses for causing corrected output pulses to have a substantially constant duty factor.

4,207,437

PROCESSOR CONTROLLED TELECOMMUNICATION SWITCHING SYSTEM

Julian L. G. Janssens, Olmen, Belgium, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 338,834, Mar. 7, 1973, abandoned. This application Sep. 23, 1974, Ser. No. 508,416
Int. Cl.[2] H04Q *3/54*
U.S. Cl. 179—18 ES **6 Claims**



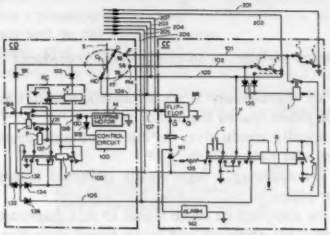
1. A method of controlling a processor controlled telecommunication switching system comprising a switching network, in which said switching network is adapted to establish call connections between inputs and outputs of said switching network and to release these connections, and in which there are at least two processors coupled to said switching network to control said network, with each processor having access to a memory including an originating junctor status buffer storing first status words containing information about call connections established through said switching network and indicating the status of these call connections, e.g., whether they are in a supervision phase, ringing phase or communication phase, and in which each processor, upon the occurrence of a breakdown of at least one other processor executes a recovery program which includes the phase stored in said first status words and releasing corresponding call connections which are not in the communication phase, the improved method including the steps of storing in a terminating junctor status buffer second status words containing information about said call connections, whereby a second status word which contains information about a call connection of which information is also stored in a said first status word also contains linkage information interlinking these corresponding status words, said processor thereafter addressing each of said first status words, executing a call phase reading operation, and when finding said communication phase, addressing the second status word corresponding to each first status word to verify whether said linkage information is correct or not, and releasing said call connection when this verification operation is not successful.

4,207,438

ROTARY SELECTOR ADAPTED TO SCAN A LINE MULTIPLE IN A STEP-BY-STEP TELEPHONE EXCHANGE

Franco De Marco, Milan, and Giorgio Biraghi, Bresso, both of Italy, assignors to Societá Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Continuation-in-part of Ser. No. 951,155, Oct. 13, 1978, abandoned. This application Jan. 17, 1979, Ser. No. 4,286
Claims priority, application Italy, Oct. 14, 1977, 28594 A/77
Int. Cl.[2] H04Q *3/14*
U.S. Cl. 179—18 G **8 Claims**



1. In a telephone exchange comprising a rotary selector for establishing connections between incoming and outgoing lines, said selector having a test level with a multiplicity of bank contacts respectively connected to test wires of said outgoing lines and with a wiper driven by a motor for stepped rotation across said bank contacts, normally closed switch means in said test wires opened in a busy state of the respective outgoing lines, and control means for intermittently energizing said motor to advance said wiper, said control means including a driving relay and further including a test relay connectable in circuit with said wiper for arresting said motor by deactivating said driving relay upon engagement of a bank contact connected to the test wire of a free outgoing line, said outgoing lines including at least one line multiple assigned to a common subscriber,

the combination therewith of:

ancillary relay means for each line multiple provided with an operating circuit including the switch means inserted in the test wire of the first line of the associated line multiple for disconnecting, in the open state thereof, said test relay from said wiper and establishing a sensing circuit which includes said test relay and further includes a common lead connected to the test wire of said associated line of said multiple other than said first line in series with said switch means thereof, said driving relay being operable by said ancillary relay means to advance said wiper beyond the test wire of said first line; and

a pulse generator in said sensing circuit for actuating said test relay through the test wire of a free line of said multiple upon the arrival of said wiper on the corresponding bank contact for deactivating said driving relay.

4,207,439

LINE/INTERFACE CIRCUIT FOR KEY TELEPHONE SYSTEMS

Bruce R. Saxon, Harrisburg, Pa., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

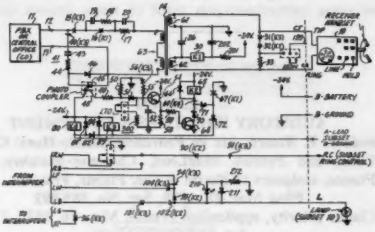
Filed Jul. 13, 1978, Ser. No. 924,273
Int. Cl.[2] H04M *1/72*
U.S. Cl. 179—99 LC **13 Claims**

1. A line/interface circuit for use with a telephone system including at least one key telephone subset having a plurality of access keys for interconnection of said subset to a telephone system by a pair of conductor lines emanating from said system, said line/interface circuit comprising:

transformer means having first and second windings, said first winding being coupled to said subset and said second winding being selectively coupled to said conductor lines,

detector means selectively coupled to said second winding and operative in a first mode to detect the presence of a ringing signal on said lines, and to provide a control signal indicative of the presence of said ringing signal,

logic means responsive to said control signal for applying an alternate signal to said subset indicative of said ringing signal,



first means coupled to said first winding and operative upon operation of said subset in response to said alternate signal to provide a first current conducting path through said subset, said path including first switching means, and

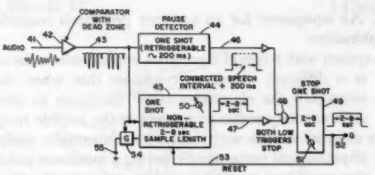
a second switching means coupled to said first means, said first and second switching means being operative by said first means to selectively DC connect said conductor lines to said second winding, said second switching means removing said detector means from said second winding when said second winding is DC connected to said conductor lines.

4,207,440

DICTATION RECORDER WITH SPEECH-EXTENDABLE ADJUSTMENT PREDETERMINED PLAYBACK TIME

Murray M. Schiffman, Westport, Conn., assignor to The VSC Company, Westport, Conn.

Continuation of Ser. No. 654,022, Jan. 30, 1976, abandoned. This application May 19, 1978, Ser. No. 907,494
Int. Cl.[2] G11B *19/02*
U.S. Cl. 179—100.1 VC **5 Claims**



1. A dictation rate controlled record reproducer comprising:

means for operating said record reproducer to obtain a speech signal from the record medium;

signal responsive means for stopping operation of said record reproducer for a predetermined stop period;

means for sensing the presence of said speech signal derived from operation of said record reproducer;

means responsive to the initial sensing of said speech signal for providing a signal for a time corresponding to a predetermined minimum run-time interval;

said responsive means being manually adjustable to provide said predetermined run-time interval;

means responsive to absence of said speech signal for providing a pause detection period signal to extend a predetermined time beyond the absence of said speech signal;

means responsive to the absence of both said signal during said predetermined time and said predetermined run inter-

val signal for producing a stop signal for a predetermined time; and

means for applying said stop signal to said signal responsive means for stopping operation of said record reproducer for said predetermined stop period;

said means for operating said record reproducer being responsive to the absence of said stop signal to provide speech signals from said medium.

4,207,441

AUDITORY PROSTHESIS EQUIPMENT

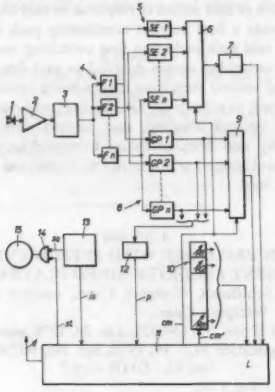
Claude F. F. Ricard, Aix en Provence; Claude-Henri Chouard, Paris, and Patrick MacLeod, Chatenay-Malabry, all of France, assignors to Bertin & Cie, Plaisir, France

Filed Mar. 13, 1978, Ser. No. 885,992

Claims priority, application France, Mar. 16, 1977, 77 07824

Int. Cl.[2] H04R *25/00*

U.S. Cl. 179—107 R **13 Claims**



1. An equipment for an auditory prosthesis comprising in combination:

a system with n sets of electrodes implantable in the cochlea at n different locations so chosen that when they are stimulated the electrodes allow the brain to identify n different frequencies comprised in the audible range;

an external emitter with means for sequentially analysing n physiological pulse signals having a minimum pulse duration equal to t, means for analysing the sound information signal collected by a microphone and thus forming n analysis signals of which the frequencies correspond to the n frequencies which can be identified by the brain, means for processing the analysis signals and thus forming the physiological pulse signals, and means for transmitting through the skin and by means of a single emitter coil a high frequency signal having a waveform defined by raster signals including said sequential physiological pulse signals, each raster signal having at least n sequential pulses respectively assigned to the n electrode sets and each having a pulse duration t representative of the energy to be transmitted to the electrode set to which it is assigned;

a receiver implant with a single receiver coil inductively coupled with the emitter coil and provided with means for allowing said receiver implant to be self-operated by the received signals.

4,207,442

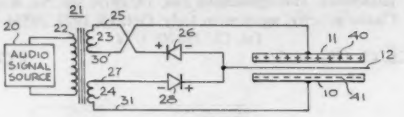
DRIVER CIRCUIT FOR ELECTROSTATIC TRANSDUCERS

Miller L. Freeman, 4221 Kling St., #4, Burbank, Calif. 91505

Filed May 15, 1978, Ser. No. 905,886

Int. Cl.[2] H04R *19/02, 3/00*

U.S. Cl. 179—111 E **9 Claims**



1. A driver circuit for an electrostatic transducer comprising:

a pair of substantially rigid, insulated, sound transparent stator plates spaced from each other;

an electrically conductive, flexible diaphragm disposed between said stator plates;

means for applying a high steady potential between said stator plates;

means for applying an audio signal to said diaphragm; and

said means for applying said audio signal including impedence elements coupled between said diaphragm and each of said stator plates for permitting each stator plate to have applied thereto, only one-half cycle of the audio signal.

9. In an electrostatic transducer:

a pair of substantially rigid, conductive, sound transparent stator elements, said stator elements being spaced from each other;

a vibratable, electrically conductive element disposed between said stator elements;

electrets of opposite polarity on said stator elements facing said vibratable element for providing a strong electrostatic field therebetween and for insulating said stator elements from said vibratable element; and

means for applying to said elements a modulated electric audio signal so that the signal is applied alternately between one of said stator elements and said vibratable element and between the other one of said stator elements and said vibratable element, whereby said vibratable element vibrates solely by the modulations of the electric field between said stator elements due to its electrical conductivity.

4,207,443

KEY-OPERATED SWITCH AND AN ASSEMBLAGE OF SUCH SWITCHES FOR ELECTRONIC DESK CALCULATORS OR THE LIKE

Yasuo Matsuura, Tokyo, Japan, assignor to Mikado Precision Industries Ltd., Tokyo, Japan

Filed Aug. 9, 1978, Ser. No. 932,326

Claims priority, application Japan, Mar. 17, 1978, 53-29876

Int. Cl.[2] H01H *13/70*

U.S. Cl. 200—5 A **10 Claims**

1. A hand-operated switch for particular use in an electronic instrument comprising:

(a) an insulating surface;

(b) fixed printed contacts on said insulating surface formed as a pair of spaced parallel lines and each adapted to be connected into a circuit of the instrument;

(c) spacer means overlying the insulating surface, and being apertured in registration with said printed contacts;

(d) a resilient plastic film overlying said spacer means;

(e) a movable printed contact on said plastic film formed as a line extending transversely to said spaced parallel lines and engageable therewith; and

(f) a button disposed in registration with said movable

contact for deflecting said plastic film through said spacer means to effect bridging of said fixed contacts.

8. In an electronic calculator of the type having a buzzer circuit adapted to produce an audible sound in response to a buzzer signal supplied from a main processing circuit, in combination:

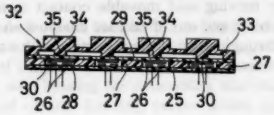
(a) an insulating base;

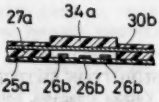
(b) a plurality of printed fixed contact sets formed in selected positions on said insulating base and individually electrically connected to the main processing circuit, each fixed contact set including at least two fixed contacts formed as a pair of parallel spaced lines;

(c) a spacer sheet overlying said insulating base and having therein a plurality of openings in register with said fixed contact sets on the insulating base;

(d) a plastic film overlying the spacer sheet;

(e) a plurality of printed movable contacts each formed as a line on that surface of the plastic film which is disposed against the spacer sheet, the movable contacts being disposed in registration with and extending transversely to said parallel spaced lines and normally held electrically disconnected therefrom by the spacer sheet;





(f) a printed pattern on the plastic film electrically interconnecting the movable contacts thereon, the interconnected movable contacts being further electrically connected to the buzzer circuit; and

(g) a plurality of buttons supported over the plastic film in register with the movable contacts on the plastic film, each button being adapted to be manually depressed to move the corresponding movable contact on the plastic film into engagement with the corresponding fixed contact set on the insulating base through the corresponding opening in the spacer sheet;

(h) whereby the buzzer signal is delivered from the main processing circuit to the buzzer circuit to cause the latter to produce the audible sound each time one of the movable contacts is moved into engagement with the corresponding fixed contact set.

4,207,444

PLANAR MULTIPLE SWITCH

Victor B. Kley, Berkeley, Calif., assignor to Kley, Fitting, Fitting, Nalley and Smith, Berkeley, Calif.

Continuation-in-part of Ser. No. 712,748, Aug. 9, 1976, Pat. No. 4,079,194. This application Jan. 6, 1978, Ser. No. 867,515

Int. Cl.[2] H01H *13/70*

U.S. Cl. 200—5 A **6 Claims**

1. A planar multiple switch having high frequency capability comprising

a substrate of an electrically insulative material having a supporting face,

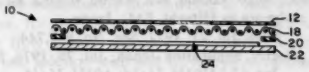
a plurality of planar electrically conductive patterns mounted on the face of the substrate,

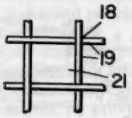
each of said conductive patterns forming switch contact means,

a flexible resilient electrically conductive planar member extending over the plurality of conductive patterns,

spacing means mounting the conductive planar member above the conductive patterns so that depression of a selected portion of the conductive planar member engages such depressed portion with at least one of the conductive patterns,

said conductive planar member being a mesh formed of fine conductive elements electrically joined together and sufficiently spaced apart to form non-conductive areas between the conductive elements such that the non-conductive areas have a size exceeding the area occupied by the conductive elements to substantially reduce capacitive coupling between the conductive planar member and the conductive patterns, and





said mesh being formed from a non-conductive material coated with a conductive material.

2. A planar multiple switch as claimed in claim 1 wherein the mesh is a mesh of non-conductive material coated with a conductive metal.

4,207,445

ON-LOAD TAP CHANGER SWITCH ASSEMBLY

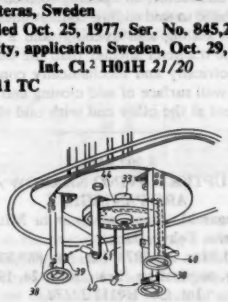
Karl E. Hammar, Ludvika, Sweden, assignor to ASEA Aktiebolag, Vesteras, Sweden

Filed Oct. 25, 1977, Ser. No. 845,290

Claims priority, application Sweden, Oct. 29, 1976, 7612026

Int. Cl.[2] H01H *21/20*

U.S. Cl. 200—11 TC **3 Claims**



1. On-load tap changer for a transformer having a base winding and a regulating winding, comprising:

a diverter switch having at least two fixed contacts;

a step selector having a plurality of fixed contacts connected to taps on said regulating winding and cooperating with two movable contacts, said movable contacts being mounted on two rotatable drive shafts and connected to the fixed contacts of said diverter switch;

a drive mechanism connected to the drive shafts of said step selector for rotating the shafts in steps relative to each other;

a plus/minus or coarse/fine switch connecting said regulating winding to said base winding; and

a damping switch for temporarily during a plus/minus or a coarse/fine switching operation connecting said regulat-

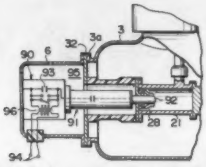
ing winding through a damping resistor to a point of defined potential, said damping switch having cooperating fixed and movable contacts and comprising operating means including a cam member, said cam member being fixedly mounted on one of the drive shafts of said step selector and operatively connected to said movable damping switch contacts.

4,207,446

GROUNDED TANK TYPE GAS CIRCUIT BREAKER

Kouji Sasaki; Seizo Nakano, and Michio Moriya, all of Hitachi, Japan, assignors to Hitachi, Ltd., Japan

Filed Jul. 21, 1977, Ser. No. 817,744
Claims priority, application Japan, Jul. 26, 1976, 51-88219
Int. Cl.[2] H01H *33/54;* A01H *33/16*
U.S. Cl. 200—148 B 5 Claims



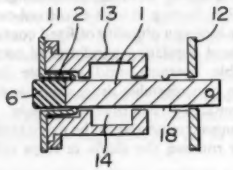
1. A grounded tank type gas circuit breaker comprising a grounded tank filled with a dielectric gas, interrupting means electrically insulated from, and mounted within, said grounded tank and including a fixed contact and a movable contact engageable and disengageable with each other, a connecting conductor arranged along the line of movement of said movable contact and mounting said fixed contact thereon, insulation support means arranged along the line of movement of said movable contact and supporting said connecting conductor in electrical insulation from said tank, said insulation support means being constructed to receive impact at the closing of said fixed and movable contacts, a sliding contact secured to said connecting conductor, an opening formed in the portion of said tank opposite to said sliding contact, means for detachably closing and sealing said opening, and a capacitor unit having an outside diameter smaller than the diameter of said opening and electrically and mechanically connected at one end to the inner wall surface of said closing and sealing means and in engagement at the other end with said sliding contact.

4,207,447

GAS INTERRUPTER HAVING NARROW AND WIDE ARC PASSAGES

Koji Ibuki, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 24, 1978, Ser. No. 889,879
Claims priority, application Japan, Mar. 24, 1977, 52-32912
Int. Cl.[2] H01H *33/74*
U.S. Cl. 200—148 R 1 Claim



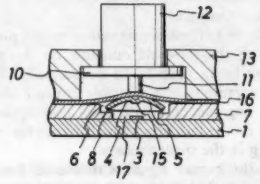
1. A gas interrupter comprising:
a container adapted to hold an interrupting gas;
first and second electrical terminals in said container;
a hollow fixed contact electrically connected to said first terminal;
an insulating nozzle fixed to said first terminal, said nozzle surrounding said fixed contact and forming an arc chamber adjacent said fixed contact, said arc chamber terminating in a hollow narrowed portion at a point opposite said fixed contact;
an elongated movable contact electrically connected to said second terminal, said movable contact having an insulating material mounted on one end and being smaller than said hollow narrowed portion by a finite amount, said movable contact being normally located with said one end electrically connected to said fixed contact and with the remainder of said movable contact passing through said arc chamber and said narrowed portion, said arc chamber having a constant volume and communicating with said container only through the hollow part of said fixed contact and said narrowed portion; and
means for moving said movable contact away from said fixed contact and out of said arc chamber so that one end passes through said narrowed portion with a narrow space therebetween.

4,207,448

PUSHBUTTON SWITCH

Akira Furusawa, and Yutaka Udagawa, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Jun. 22, 1978, Ser. No. 917,851
Claims priority, application Japan, Jun. 29, 1977, 52-76592
Int. Cl.[2] H01H *1/06, 3/12*
U.S. Cl. 200—159 B 13 Claims

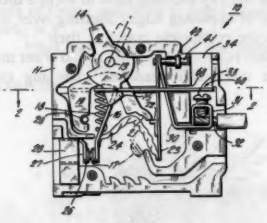


1. A pushbutton switch comprising a circuit board having a single fixed electrical contact embedded therein, a dome-shape conductive click spring positioned to touch said fixed electrical contact when said click spring curvature is reversed under influence of pressure, a common conductive sheet overlaying said click spring and forming an electrical contact to electrically connect with said embedded single electrical contact in said circuit board when the curvature of said click spring is reversed, a pushbutton located above said conductive sheet to bear on said dome-shape click spring to cause a reversal of said click spring curvature, spacer means located on said circuit board forming a recessed seating portion around said embedded electrical contact, said click spring having a circumferential edge seated in said recessed seating portion being retained therein to form said pushbutton switch, said recessed seating portion having a diameter larger than that of said click spring when said click spring is in its initial curvature so as to accommodate the enlarging diameter of said click spring when its curvature is reversed.

4,207,449
SAFETY SHIELD FOR TERMINAL

Charles T. Robins, Swarthmore, Pa., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Jul. 3, 1978, Ser. No. 921,470
Int. Cl.[2] H01H 9/00
U.S. Cl. 200—308 10 Claims

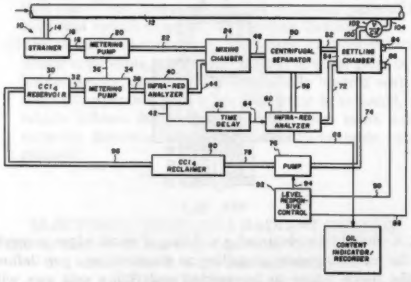


1. An electrical switch including a housing, relatively stationary and movable contacts within said housing and operable into and out of engagement, spaced first and second terminals supported on said housing for connecting said switch into a circuit external of said housing, means within said housing connecting said contacts in circuit between said terminals, a recess in said housing, said recess having an entrance, wire grip means at said first terminal including a clamping screw disposed for operation by a tool inserted through said entrance into said recess, a shield operatively connected to said movable contact for movement between inactive and active positions when said movable contact is respectively disengaged from and engaged with said movable contact, said shield when in said inactive position being operatively disposed to permit said screw to be operated by a tool extending through said entrance into said recess, said shield when in said active position having a section entered into said recess and interposed between said entrance and said screw in operative position blocking engagement of said screw by a tool inserted into said recess through said entrance whereby said screw is inaccessible when said contacts are engaged.

4,207,450
CONTINUOUS OIL CONCENTRATION MONITOR

John Mittleman, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 14, 1978, Ser. No. 915,496
Int. Cl.[2] G01N 21/26, 21/34, 33/18
U.S. Cl. 250—343 4 Claims



1. Apparatus for continuously monitoring the concentration of oil in a main flow stream principally of water, said apparatus comprising:

first metering means for establishing a sample flow stream having a first colume flow rate;

a reservoir of a solvent capable of extracting said oil from said water;

second metering means for establishing a solvent flow stream from said reservoir at a second volume flow rate in a predetermined ratio to said first volume flow rate;

a first infrared analyzer connected in said solvent flow stream immediately downstream of said second metering means and operative to provide a continuously variable first electrical output signal that is continuously representative of changes in the infrared transmittance of said solvent in said solvent flow stream;

mixer means immediately downstream of said first infrared analyzer, for mixing said solvent flow stream with said sample flow stream whereby oil in said sample stream enters into solution with said solvent in an output flow of said mixer means;

centrifugal separator means, operable on said output flow of said mixer means, for providing a first output flow of said separator means comprised principally of water and a second output flow comprised principally of said solvent and any oil in solution therewith;

a second infrared analyzer connected in said second output flow of said centrifugal separator means;

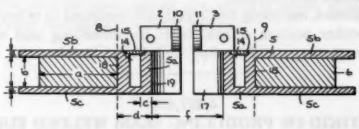
time delay means, responsive to said first electrical output signal of said first analyzer, for providing a time delay in said first electrical output signal substantially equal to the time required for said solvent to flow from said first analyzer through said mixer means and through said centrifugal separator to said second analyzer;

said second analyzer being responsive to said first electrical output signal after said time delay and to the content of oil in said second output flow of said centrifugal separator means to provide a second electrical output signal that is continuously representative of changes in the concentration of oil in said main flow stream.

4,207,451
MULTI-LAYERED ELECTRICAL INDUCTION COIL SUBJECTED TO LARGE FORCES

Chester A. Tudbury, White Plains, N.Y., assignor to Thermatool Corporation, Stamford, Conn.

Filed Mar. 13, 1978, Ser. No. 885,483
Int. Cl.[2] H05B 5/18
U.S. Cl. 219—10.79 13 Claims



1. In apparatus for heating or forming a metal part by magnetically inducing an electric current in said metal part of sufficient magnitude to heat or form said part with a coil adjacent said part and connected to a source of electrical current having a predetermined frequency and having a current capacity sufficient to provide to the coil a current of a magnitude sufficient to induce said first-mentioned current in said part, said coil having a first metal portion and a second metal portion and having at least a part of said first portion intermediate said second portion and said metal part, said first portion being made of a relatively high electrical conductivity metal and being electrically connected to said source thereby to cause the current of said source to flow in said part of said first portion, said part of said first portion being deformable by the magnetic field produced by the current flowing therein in the absence of said second metal portion, and said second portion being made of a metal having an electrical conductivity less than the electrical conductivity of copper and having a Young's Modulus at least 20% greater than the Young's Modulus of the metal of said first portion and said second portion engaging said part of

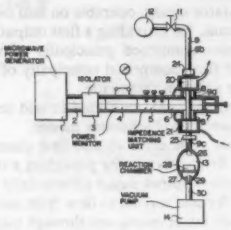
said first portion for resisting deformation of said last-mentioned part during the passage of current through said coil, and said part of said first portion intermediate said second portion and said metal part having a thickness at least equal to the reference depth of said current in said metal of said first portion.

4,207,452

ACTIVATED GAS GENERATOR

Sakae Arai, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Apr. 19, 1978, Ser. No. 897,727
Claims priority, application Japan, Apr. 25, 1977, 52-46744
Int. Cl.[2] H05B *9/06*
U.S. Cl. 219—10.55 A **15 Claims**



1. In an activated gas generator including a microwave electric energy generator, a microwave irradiation furnace for receiving microwave energy delivered from said microwave electric energy generator, a gas pipe including a central portion which extends through the microwave irradiation furnace, one end of the pipe being connectable to a source of raw gas and the other end of said pipe being connectable to first a reaction chamber followed by evacuation means and a metal tube extending outside of the microwave irradiation furnace and coaxially surrounding the dielectric tube, the improvement comprising

a dielectric tube for activating raw gas from said source, formed in said central portion of said pipe and extending from a portion of said tube inside said furnace toward said other end of said pipe to another portion of said tube outside said furnace

and means, including said metal tube mounted to at least said another portion of said tube, for absorbing said microwave energy and cooling said dielectric tube.

4,207,453

METHOD OF PRODUCING SEAM WELDED TUBE

Cyril J. Astill, Deep River, Canada, assignor to Canadian Patents & Development Ltd., Ottawa, Canada

Filed Oct. 10, 1978, Ser. No. 949,768
Claims priority, application Canada, Jan. 16, 1978, 295021
Int. Cl.[2] B23K *31/06, 9/02;* **B21B** *17/06*
U.S. Cl. 219—61.11 **1 Claim**

1. A method of producing a seam welded metal tube, comprising:

(a) providing a rectangular shaped sheet metal blank with key locating slots in a first pair of opposed edges thereof, the key locating slots being centrally located between a second pair of opposed edges of the sheet metal blank,

(b) machining the second pair of opposed edges of the sheet metal blank to size using the key locating slots to position the sheet metal blank during machining,

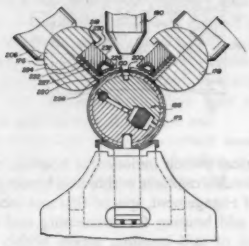
(c) forming marginal edge portions of the second pair of opposed edges of the sheet metal blank to substantially the curvature of the finished tube.

(d) centrally locating the sheet metal blank to a collapsible mandrel by means of keys in the key locating slots, so that the formed marginal edge portions curve around the curved surface of the collapsible mandrel towards a longitudinally extending gas gallery slot in the mandrel,

(e) clamping a central portion of the sheet metal blank extending between the key locating slots around the collapsible mandrel by means of a cradle, then

(f) with the collapsible mandrel expanded, rolling the sheet metal blank therearound, by means of skid rollers, from each side of the key locating slots to form a tube with the second pair of opposing edges abutting over the gas gallery slot in the collapsible mandrel, then

(g) with the skid rollers holding the rolled sheet meltal blank against the collapsible mandrel, clamping the formed



marginal edge portions against the collapsible mandrel by curved portions of spring metal heat sink finger strips secured in substantially V-shaped slots in the skid rollers, with the clamping force being applied by fluid pressure in tubes of an elastic material in the substantially V-shaped slots and on the convex side of the curved portions of the finger strips, then

(h) seam welding the second pair of opposing edges of the sheet metal blank with an inert gas to the gas gallery slot, to form a seam welded tube, and then

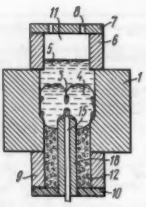
(i) collapsing the collapsible mandrel from the welded tube to separate the collapsible mandrel therefrom.

4,207,454

METHOD FOR ELECTROSLAG WELDING OF METALS

Anatoly N. Safonnikov; Anatoly G. Sinchuk, and Anatoly V. Antonov, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Jun. 2, 1978, Ser. No. 912,104
Claims priority, application U.S.S.R., Jun. 6, 1977, 2495515[I]
Int. Cl.[2] B23K *9/18, 25/00*
U.S. Cl. 219—73.1 **11 Claims**



1. A method for electroslag welding of metal edges comprising the following steps: installing an electrode in a gap defined by the metal edges to be welded and filling said gap with welding flux having a density higher than the density of the metal to be welded, forming a slag bath on the surface of the welding flux, passing welding current through said slag bath and melting down therein said electrode, with the weld being formed in the downward direction by the molten metal float-

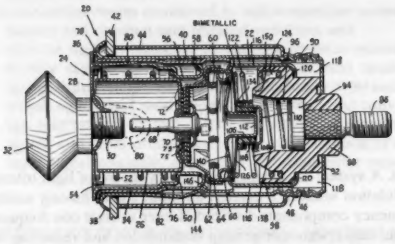
ing up in the molten slag, and protecting the molten metal from the atmosphere.

4,207,455

AUTOMATIC ELECTRIC CIGAR LIGHTER WITH BASE SWITCH

Laurence G. Horwitt, New Haven, and Donald J. Mattis, Norwalk, both of Conn., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Oct. 10, 1978, Ser. No. 949,657
Int. Cl.² F23Q 7/02
U.S. Cl. 219—265 **26 Claims**



1. An automatic electric cigar lighter, comprising in combination:

(a) a holder device including a socket having two electrical contacts forming part of the cigar-lighter electrical circuit,

(b) an ignitor plug receivable in the socket, comprising a manually-operable part movable in the socket between energizing and de-energizing positions,

(c) said plug having an electrical-resistance heating coil carried at its inner end,

(d) means for establishing an electrical circuit from the holder device electrical contacts through the heating coil when the said manually-operable part is shifted to its energizing position, the said means including an electrical switch having normally open relatively-movable cooperable electrical contact parts all of which are carried by the holder device, and

(e) means becoming operative in response to heating of said heating coil, for opening said electrical switch to break said electrical circuit and de-energize the coil, said means including a bimetallic member carried by said holder device and having a circuit-opening position and a closed-circuit position, said bimetallic member carrying no electrical current and having an actuator portion which is free and clear of permanent attachment to any other parts of the holder device, said actuator portion being adapted to shift one of the cooperable electrical contact parts of said electrical switch to effect the opening thereof,

(f) one of said socket contacts comprising a follower contact which is movable axially with respect to other parts of the holder device, and which moves axially inward with the manually-operable part when the latter is actuated, and which follows the manually-operable part in an axially outward direction when the manually-operable part is released,

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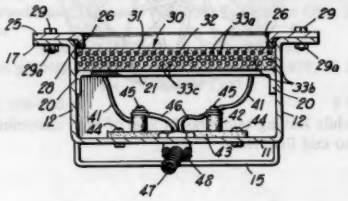
4,207,456

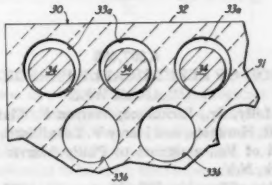
ELECTRICAL INFRARED RADIANT HEATER

Willie H. Best, P.O. Box 868, Columbia, S.C. 29202

Filed Nov. 4, 1977, Ser. No. 848,508
Int. Cl.² H05B 3/00
U.S. Cl. 219—345 **4 Claims**

1. An electrical infrared radiant heater comprising a heater assembly consisting essentially of an extruded dielectric refractory clay ceramic holder having a heat radiating surface said holder being provided with a plurality of first through holes disposed closely adjacent to each other in a first row immediately below said heat radiating surface of said holder and extending throughout the length of said holder, heating element wires extending axially through said first through holes, the diameter of said wires being slightly less than the diameter of said first through holes for substantially filling said first through holes said heating element wires being joined to provide an electrical resistance element, said wires in said first through holes and said heat radiating first through holes themselves being sufficiently close to said heat radiating surface that





said wires heat said heat radiating surface to an infrared radiating condition when electricity is passed through said wires and means for connecting said electrical resistance element to a source of electricity, said holder being provided with a plurality of second through holes arranged in a second row said second through holes being unobstructed, whereby said unobstructed holes provide cells for insulating purposes said first row being between said second row and said radiating surface, said first row and said second row being disposed adjacent to each other and parallel to each other.

4,207,457

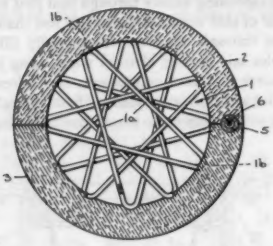
PORCUPINE WIRE COIL ELECTRIC RESISTANCE FLUID HEATER

John H. Haglund, Danbury, Conn., and Robert G. Grandi, Park Ridge, Ill., assignors to The Kanthal Corporation, Bethel, Conn.

Filed Jun. 29, 1978, Ser. No. 920,250
Int. Cl.² H05B 3/02
U.S. Cl. 219—381 **6 Claims**

1. A porcupine wire coil electric resistance fluid heater comprising a porcupine coil of electric resistance wire formed by a substantially helical series of substantially flat convolutions having straight legs and looped ends, the wire having an inherent spring-back biasing the convolutions to bunch together and the coil being stretched in its axial direction so that the convolutions are spaced from each other, and a tube having a substantially cylindrical inside adapted to conduct a fluid flow and formed by refractory electrical insulation and enclosing the stretched coil, each of the said looped ends being em-

bedded in said insulation with a degree of embedding sufficient to individually anchor immovably each of the coil's convolu-



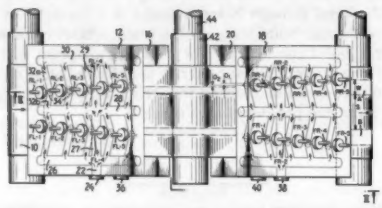
tions while leaving said straight legs of each convolution exposed to said fluid flow.

4,207,458

METHOD OF ELECTRICALLY PERFORATING A PLANAR WEB

A. Clifton Lilly, Jr., Richmond; Warren E. Claflin, Bon Air; William R. Hardesty, and Harry V. Lanzilliotti, both of Richmond, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Continuation of Ser. No. 789,687, Apr. 21, 1977, abandoned.
This application Oct. 18, 1978, Ser. No. 952,614
Int. Cl.[2] H05B 7/18
U.S. Cl. 219—384 **5 Claims**



1. A method of perforating a planar web comprising the steps of:

(a) supporting a pair of electrodes in spaced opposing relation to define a gap therebetween for passage of said web;

(b) determining the breakdown voltage level of said gap, with said web therein;

(c) generating voltage having a succession of a-c half cycles each commencing and ceasing at times spaced by a preselected time period;

(d) conveying said web linewise through said gap at such lineal speed that a prescribed lineal extent of said web traverses said gap during each said time period; and

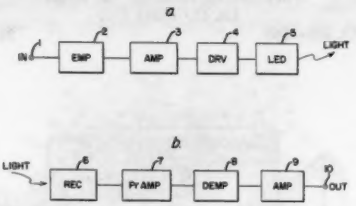
(e) while issuing pressurized gas onto the surfaces of said electrodes adjacent said gap and said web therein and applying said a-c half cycle voltage to said electrodes, establishing an amplitude level for said voltage in excess of twice said gap breakdown voltage level and establishing a flow level for said pressurized gas to produce perforations in said web spaced apart longitudinally of said web by a distance less than said prescribed lineal extent.

4,207,459

OPTICAL COMMUNICATION SYSTEM UTILIZING LIGHT EMITTING DIODE

Hiroshi Nakamura, Sagamihara; Naomasa Hanano, Kawasaki, and Kazuo Iguchi, Chaigasaki, all of Japan, assignors to Fujitsu Limited, Japan

Filed Sep. 9, 1977, Ser. No. 831,851
Claims priority, application Japan, Sep. 13, 1976, 51/109702
Int. Cl.[2] H04B 9/00
U.S. Cl. 455—513 **24 Claims**



24. A system for communicating, by means of light intensity modulation without a carrier, an input signal having multiple frequency components distributed over at least one frequency range, said system comprising transmission and receiving subsystems, at least one of said subsystems comprising at least one component having a varying range of linear operation that is a function of the frequency of said input signal, the narrower portions of said varying range of linear operation representing maximum operational limits for corresponding ones of said frequency components of said input signal, said system comprising:

emphasis means comprised within said transmission subsystem to relatively amplify to a lesser extent said frequency components of said input signal for which said range of linear operation of said at least one component represents said maximum operational limits; and

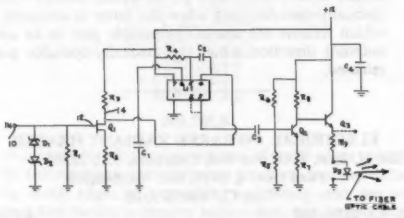
de-emphasis means comprised within said receiving subsystems to relatively amplify to a greater extent said frequency components which were amplified to a lesser extent by said emphasis means.

4,207,460

LOW POWER FREQUENCY MODULATED HYBRID FIBER OPTIC DATA ACQUISITION SYSTEM

Joseph M. Hudak, Rome, N.Y.; Gerald L. Zielinski, Downers Grove, Ill., and Charles G. Messenger, Rome, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation of Ser. No. 698,984, Jun. 23, 1976, abandoned.
This application Oct. 12, 1978, Ser. No. 950,751
Int. Cl.[2] H04B 9/00
U.S. Cl. 455—612 **9 Claims**



1. A fiber optic data transmission apparatus is comprised of: a transmitter means receiving an input signal from a test unit, said input signal comprising D.C. components as well as

high frequency components, said transmitter means utilizing a linear driver means to frequency modulate said input signal on a carrier frequency while preserving the carrier waveshape, said transmitter means providing a first output signal, said first output signal being transformed into infrared radiation,

said transmitter means is comprised of

a high input impedance means to receive said input signal,

a voltage controlled oscillator connected to said high input impedance means to receive said input signal, said input signal driving said voltage controlled oscillator to provide said first output signal, and

a signal conversion means connected to said voltage controlled oscillator to transform said first output signal to said infrared radiation

a transmission means connected to said transmitter means to receive and conduct said infrared radiation, and

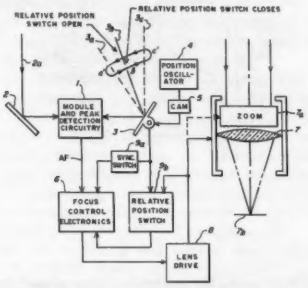
a receiver means connected to said transmission means to receive said infrared radiation therefrom, said receiver means converting said infrared radiation into a second output signal, said receiver means processing and converting said second output signal to provide a monitored signal, said monitored signal being a reproduction of said input signal originally applied to said transmitter means.

4,207,461

CONTINUOUS FOCUS PROPORTIONAL CONTROLLER

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 19, 1977, Ser. No. 834,760
Int. Cl.[2] G01J *1/20*
U.S. Cl. 250—201 **11 Claims**



1. Apparatus for use with an autofocus system which includes an optical element to be positioned priximate a desired focus position, the system producing first, second and third output signals each of which may change between first and second states during operation of the system comprising:

first storage means connected to the system, operable, upon the occurrence of a change in the first signal from its first state to its second state to assume a reference state and operable, upon the occurrence of a change in the second signal from its second state to its first state to change state with time towards a limit state;

second storage means connected to the system, and to said first storage means, operable, whenever the second signal is in its second state to assume the reference state during those times when the third signal is in its first state and to change state with time towards the limit state during times when the third signal is in its second state, and operable, whenever the second signal is in its first state, to hold its own state during times when the third signal is in its second state and to assume the state of said first storage means during times when the third signal is in its first state;

third storage means connected to the system and to said second storage means and operable upon the occurrence of a change in the first signal from its second state to its first state to assume the state of said second storage means; and

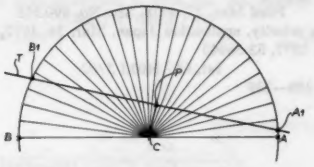
motive means connected to said third storage means and to the optical element to move the optical element toward the desired focus position in accordance with the state of said third storage means.

4,207,462

LINE-TRACE READ-OUT METHOD AND DEVICE FOR THE SERVO-CONTROL OF MACHINE TOOLS

Jean Peiffert, 42 Allee de Persepolis, Orsay, Essonne, and Roger S. Barbedienne, 11, rue de Neuville, Erangy sur Oise, both of France

Filed Jul. 21, 1978, Ser. No. 926,995
Claims priority, application France, Jul. 22, 1977, 77 22641
Int. Cl.[2] G05B *1/00*
U.S. Cl. 250—202 **8 Claims**



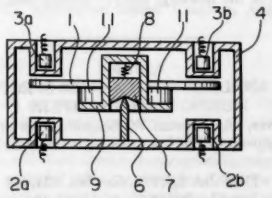
1. A method of line-trace read-out with a view to commanding the operation of a machine through appropriate servo-control means by processing a signal from a photo-electric cell, comprising the steps of illuminating a line-trace by a light spot scanning radially from, and by rotation around, a centre that is set near the line-trace to be read, the radial scan having its own scan frequency and said scan turning around said centre at a specific frequency of rotation, receiving a first signal from the modulation of the contrast between the line-trace and the surrounding background, forming a second signal corresponding to the minimum distance between the scan sweep centre and the line-trace, and processing said second signal to produce the co-ordinates needed for directing said servo-control means.

4,207,463

ROTATION ANGLE SENSOR

Motoi Iyeta, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Feb. 14, 1978, Ser. No. 877,820
Claims priority, application Japan, Feb. 14, 1977, 52-14081
Int. Cl.[2] G01D *5/34*
U.S. Cl. 250—231 SE **12 Claims**



1. An improved rotation angle sensor comprising,

a sensor disc supported at the center thereof coinciding with the center of rotation of said rotation angle sensor, said sensor disc allowing a light to pass through at least a part of the area of said disc,

a pair of photo-sensitive elements arranged spatially on one side of said sensor disc,

a light source system arranged spatially on the other side of said sensor disc, and

a detecting mechanism electrically coupled to said photo-sensitive elements for generation of an output corresponding to detected difference in incident optical quatity,

said sensor disc and said photo-sensitive elements being relatively rotatable to each other about said center of rotation and the optical transmittancy of said sensor disc changes in a continuous manner from more opaque to more light transmissive with distance in one direction along a selected diametral line across said disc and the transmittancy is constant along any line crossing said selected diametral line at right angles thereto.

4,207,464

PHOTOELECTRIC SWITCH

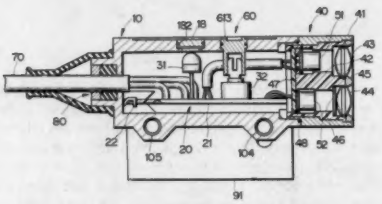
Toshifumi Fukuyama, and Norio Onji, both of Nagaokakyo, Japan, assignors to Omron Tateisi Electronics Co., Nagaokakyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,516

Claims priority, application Japan, Mar. 26, 1977, 52-33667; Mar. 26, 1977, 52-36943

Int. Cl.[2] H01J *5/02*

U.S. Cl. 250—239 **9 Claims**



1. A photoelectric switch comprising:

a housing of opaque material having a first opening at one end thereof and a second opening at another end;

a circuit board having a lead conductor and shaped to be removably set in said housing through said first opening;

a hollow fluid-tight sealed cap member secured to said circuit board and removably secured to said housing to thereby close said first opening, said hollow cap member having a window means of transparent material for passing light therethrough;

a plurality of circuit elements mounted on and electrically connected to said circuit board;

at least one of a light-emitting element and a light-responsive element disposed within said hollow cap member and electrically connected to said circuit board; and

a fixing means for securing said lead conductor in position with respect to said housing, with said conductor extending out of the housing, and for closing said second opening.

4,207,465

ISOTOPE ANALYSIS WITH A MASS SPECTROMETER USING SMALL SAMPLES

John A. Favre, and Thomas W. Schmidt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 3, 1978, Ser. No. 921,684

Int. Cl.[2] B01D *59/44;* H01J *39/34*

U.S. Cl. 250—288 **25 Claims**

1. Apparatus for determining the difference in the concentration of a selected isotope in first and second materials to be analyzed, where only a small sample of said first material is available for analysis but a large sample of said second material is available for analysis, comprising:

a mass spectrometer having an inlet to receive materials to be analyzed, said inlet having first and second openings therein, said mass spectrometer having first and second means for ionizing a fluid, said mass spectrometer being capable of providing an output signal representative of the concentration of a selected isotope in a material introduced into said mass spectrometer;

a sample valve means having a sample loop;

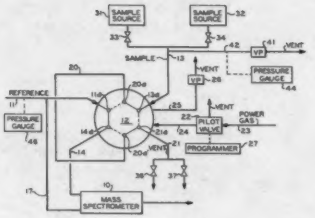
means for supplying said second material as a carrier fluid to said sample valve means;

means for supplying said first material to said sample loop of said sample valve means;

means for actuating said sample valve means to supply the volume of said first material contained in said sample loop of said sample valve means to said first means for ionizing a fluid to thereby form a molecular beam of said first material, said sample loop having a diameter and length sufficient to substantially prevent mixing of said first material and said carrier fluid;

means for supplying said second material to said second means for ionizing a fluid to thereby form a molecular beam of said second material;

means for directing the molecular beam of said first material towards said first opening of said inlet of said mass spectrometer;



means for directing the molecular beam of said second material towards said second opening of said inlet of said mass spectrometer;

shutter means positioned so as to intersect the molecular beam of said first material and the molecular beam of said second material;

means for actuating said shutter means so that the molecular beam of said first material and the molecular beam of said second material are passed to said inlet of said mass spectrometer alternatively;

a phase sensitive detector means;

means for supplying the output signal from said mass spectrometer to said phase sensitive detector means;

means, responsive to said means for actuating said shutter means, for establishing a reference signal having a frequency corresponding to the frequency at which the molecular beam of said first material and the molecular beam of said second material are alternatively passed to said inlet of said mass spectrometer; and

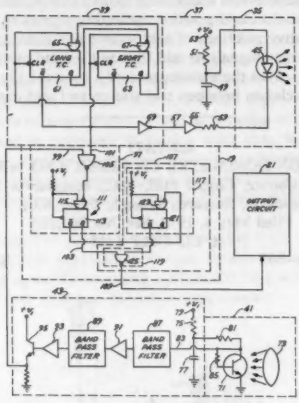
means to supply said reference signal to said phase sensitive detector means, said phase sensitive detector means supplying an output signal representative of the difference in the concentration of said selected isotope in said first material and the concentration of said selected isotope in said second material.

4,207,466

INFRARED PROXIMITY DETECTING APPARATUS

David J. Drage, 1223 W. Barry Ave., Chicago, Ill. 60657, and Lawrence N. Harkness, 115 N. Princeton Ave., Villa Park, Ill. 60181

Filed Feb. 27, 1978, Ser. No. 881,420
Int. Cl.[2] G01J 1/00; B60Q 1/00
U.S. Cl. 250—338 11 Claims



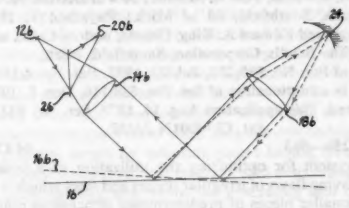
1. Proximity detection apparatus comprising:
means for generating pulses of infrared radiation at a predetermined frequency along a preselected direction;
infrared detector means positioned with respect to said generating means for producing an analog signal responsive to the detection of infrared radiation;
synchronous monitoring means for receiving said analog signal and generating a first digital signal representative of infrared radiation detected in synchronization with generated infrared radiation, said monitoring means including missing pulse detection means for monitoring said first digital signal with respect to a first predetermined time period for generating a second digital signal representative of the frequency synchronization of detected infrared radiation and generated infrared radiation; and
timer means for receiving said second digital signal and producing a third digital signal representative of said frequency synchronization occurring for at least a second predetermined time period.

4,207,467

FILM MEASURING APPARATUS AND METHOD

Walter M. Doyle, Laguna Beach, Calif., assignor to Laser Precision Corp., Utica, N.Y.

Filed Sep. 5, 1978, Ser. No. 939,271
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—338 9 Claims



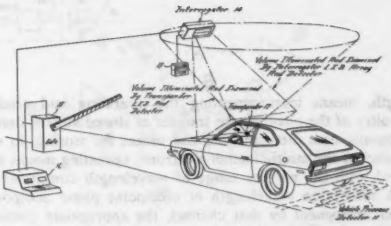
1. An optical apparatus for measuring a characteristic of a film carried by a reflecting substrate comprising:
a radiation-propagating means so oriented that the radiation strikes the film and substrate at an angle other than perpendicular;
retro-reflector means which is located at the side of the apparatus remote from the radiation-propagating means and which receives the radiation reflected form the substrate and returns it toward the substrate on lines substantially parallel to those of the radiation coming toward the retro-reflector; and
detector means which is located at the side of the apparatus near the source and which receives the radiation reflected from the substrate on its return from the retro-reflector means.

4,207,468

OBJECT IDENTIFICATION SYSTEM

Stephen S. Wilson, Ann Arbor, Mich., assignor to Kilo Corporation, Ann Arbor, Mich.

Division of Ser. No. 709,237, Jul. 27, 1976, Pat. No. 4,121,102.
This application May 8, 1978, Ser. No. 903,808
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—341 6 Claims



1. In a transponder/responder system wherein said transponder is battery operated and is adapted to emit a transponder signal in response to the receipt of a remote enabling signal;
a responder including means for generating a timing signal, means responsive to said timing signal for generating said remote enabling signal, means for receiving said transponder signal, and means for remotely checking the condition of said battery by temporally comparing the time of receipt of said transponder signal relative to said timing signal.

4,207,469

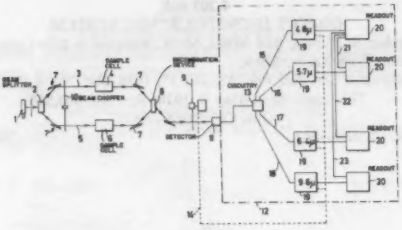
ANALYSIS OF EMULSIONS AND SUSPENSIONS

Joseph Hopkins, Cramlington, and David McKenna, Tyne and Wear, both of England, assignors to Sir Howard Grubb Parsons and Company Ltd., Newcastle upon Tyne, England

Continuation of Ser. No. 710,704, Aug. 2, 1975, Pat. No. 4,076,983. This application Dec. 22, 1977, Ser. No. 863,429
Claims priority, application United Kingdom, Aug. 4, 1975, 32510/75
Int. Cl.[2] G01J 1/00
U.S. Cl. 250—343 2 Claims

1. Apparatus for the quantitative estimation of the dispersion medium and one or more components forming the disperse phase of an emulsion or suspension or mixture thereof comprising a double beam, infra-red absorption spectrometer instrument having an infra-red source, beam splitting means providing two beam paths of infra-red radiation from the source, a first sample cell disposed in a first of the beam paths and a second sample cell disposed in the second of the beam paths, re-combination means for the beams subsequent to their passage through the cells to provide a single re-combined beam path, a beam chopping device interacting with the two beam paths prior to recombination, narrow range wavelength selection means positioned to limit the wavelength range of radiation in the re-combined beam path, a detector for converting the optical data in the re-combined beam path into electronic

signals, conversion circuitry for providing electronic data equivalents to the natural logarithm of the ratio of the energies of the beams in the re-combined beam path directed onto the detector, multi-channel electronic operating and read-out circuitry each channel of which is individually selectable for connection to the conversion circuitry and corresponds to measurements at one of the narrow ranges of wavelength selected by the narrow range wavelength selection means, means connecting the channel selection means for the multi-channel electronic operating and read-out circuitry with the narrow range wavelength selection means to effect the required correspondence at each selected narrow range of wavelength, means interconnecting the operating and read-out circuitry of the channels for transfer of stored and/or derived electronic data therebetween and means for storing, in each channel of the multi-channel electronic operating means associated with the narrow range of wavelength containing the peak absorption wavelength of a disperse phase component under assessment by that channel, the appropriate predetermined ratio of the absorption coefficient of the dispersion medium at the narrow range of wavelength selected for the channel concerned to the absorption coefficient of the dispersion medium at a chosen narrow range of wavelength associated with a channel for the assessment of dispersion medium absorbance.



4,207,470

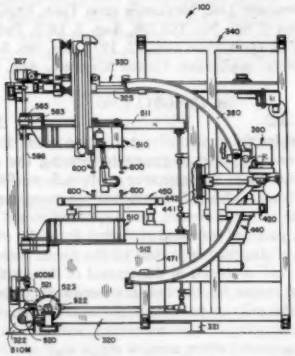
TIRE INSPECTION SYSTEM

Donald N. Heisner, Euclid, and Charles R. Bentivegna, Mayfield Heights, both of Ohio, assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 495,377, Aug. 7, 1974, Pat. No. 4,088,936. This application Mar. 8, 1978, Ser. No. 884,541

Int. Cl.[2] G01N *23/00*

U.S. Cl. 250—358 T **8 Claims**



1. In a tire inspection apparatus of the type having drive means for delivering and positioning a tire at an inspection station, an inspection apparatus having a movable penetrative emanation source for emitting penetrative emanation along a path, and a movable penetrative emanation detector, first and second motive structures for moving said source and detector, the improvement of a positioning system comprising:

(a) sensing means for producing signals indicating the positions of said source and said detector;

(b) positioning means connected between said sensing apparatus and said first and second motive structures and being responsive to said position indicating signals to compare the relative positions of said source and detector to produce output signals to said first and second motive structures to effect the maintenance of a substantially constant spatial relation between said source and said detector.

4,207,471

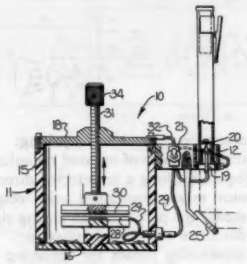
RADIATION DOSIMETER CHARGER AND METHOD

Stephen R. Coover, Chapel Hill, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed May 1, 1978, Ser. No. 901,690

Int. Cl.[2] G01T *1/18*

U.S. Cl. 250—377 **10 Claims**



1. A charger for ion chamber radiation dosimeters comprising:

socket means for receiving a dosimeter to be charged and having electrical terminal means for applying to a received dosimeter an electrical charging potential, and

electrostatic potential generating means for generating an electrostatic potential and electrically connected with said terminal means for applying a generated potential through said terminal means and thereby for charging a received dosimeter, said generating means having an electret and means for adjustably increasing and decreasing the separation of said electret and thereby adjustably increasing and decreasing the level of the generated charging electrostatic potential in accommodation of variations in the charging requirements of various dosimeters.

4,207,472

LUMBER INSPECTION AND OPTIMIZATION SYSTEM

Jerome M. Idelsohn; Paul A. Mueller, both of Detroit; M. David Freedman, Southfield, all of Mich.; Raymond T. Hebert, Saratoga, and Edward A. King, Orinda, both of Calif., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 818,252, Jul. 22, 1977, Pat. No. 4,149,089, which is a continuation of Ser. No. 638,116, Dec. 5, 1975, abandoned. This application Aug. 14, 1978, Ser. No. 933,393

Int. Cl.[2] G01N *21/32*

U.S. Cl. 250—563 **14 Claims**

1. A system for optimizing the utilization of a board of lumber having flaws of irregular shapes and sizes which is to be cut into smaller pieces of predetermined dimensions comprising:

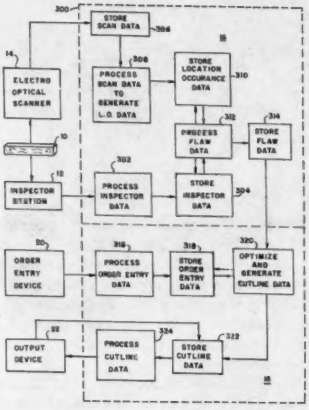
conveyor means for moving said board in a predetermined direction at a predetermined constant speed;

means disposed along the path of said conveyor means for

line scanning at a predetermined frequency the surfaces of said board in a direction normal to said predetermined direction of motion to generate analog scan data having frequency components indicative of the characteristics of surfaces being scanned, said means further including means for generating a board present signal when a board is present in said means for line scanning;

quantizer means having frequency filtering means for generating HI-PASS and LO-PASS digital scan data quantized with respect to the frequency components of said analog scan data, said HI-PASS digital scan data indicative of long narrow flaws generated in response to analog scan data having a frequency component higher than a predetermined frequency, and said LO-PASS digital scan data indicative of larger flaws including the edge of the board generated in response to analog scan data having frequency components lower than said predetermined frequency, said quantizer means further including means for generating sync signals in synchronization with said line scans;

scanner interface means receiving said HI-PASS and LO-PASS digital scan data, said sync signals and said board present signal for encoding said HI-PASS and LO-PASS digital scan data in a predetermined format;



means for generating order entry data indicative of the dimensions, permitted flaws and priority of the pieces to be cut from said board in response to an input from an external source;

computer means having sufficient storage and computation means for selecting from said board, in a descending order of priority, pieces having no or only permitted flaws and for generating cut line data indicative of the end locations of said selected pieces, said computer having means for receiving and storing said HI-PASS and LO-PASS digital scan data encoded in said predetermined format means for receiving and storing said order entry data, means for generating a flaw data buffer storing the dimensions of the board and the location of the edges of the flaws determined from said encoded digital scan data, means for processing and said order entry data in a descending order of priority, means for selecting pieces having no or only permitted flaws from said board in said descending order of piece priority and means for generating said cut line data; and

means disposed along said conveyor to receive said board after passing through means for line scanning for operating on said board in response to said cut line data.

4,207,473

FRAME DETECTION CIRCUITRY FOR MICROFILM READER APPARATUS

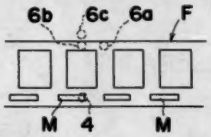
Keiji Nakatani, Machida, and Hidenori Suzuki, Kawasaki, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

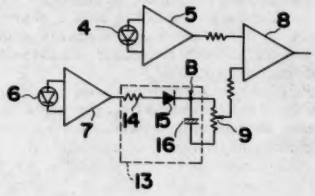
Filed Jun. 6, 1978, Ser. No. 913,014

Claims priority, application Japan, Jun. 17, 1977, 52-80314[U]; Dec. 16, 1977, 52-170133[U]

Int. Cl.² G06K 7/10

U.S. Cl. 250—570 **6 Claims**





1. Frame detection circuitry for sensing frame sensing marks on a microfilm being transported through an exposure station in microfilm reader apparatus, comprising:

light emitting means for illuminating the microfilm;

first photoelectric converting means responsive to the light transmitted from said frame sensing marks for generating a first output signal;

second photoelectric converting means responsive to light from said light emitting means through a portion of the microfilm other than the portions thereof occupied by said frames or sensing marks;

comparison means for comparing said first output signal with said second output signal, said second output signal providing a reference level signal, whereby said comparison means generates a control signal representing the sensing of a frame when said first output signal exceeds said second output signal;

smoothing circuitry connected to the output of said second photoelectric converting means for smoothing noise signal detected by said second photoelectric converting means; and

adjusting means inserted between said smoothing circuitry and said comparison means for independently varying the output of said smoothing circuitry.

4,207,474

SEQUENTIAL TWO TONE DETECTOR

Greg M. Townsend, Rolling Meadows, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 21, 1978, Ser. No. 927,267

Int. Cl.² H04Q 9/12

U.S. Cl. 307—40 **7 Claims**

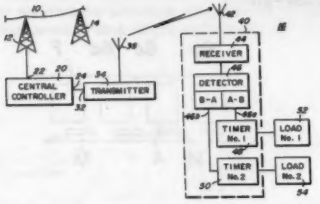
1. A method for detecting the presence of a first frequency signal followed by a second frequency signal comprising the steps of:

(a) determining that the first frequency signal is present for a predetermined minimum time interval, and providing a

first indication signal when the first signal is determined to be present;

(b) determining that the second frequency signal is present for a predetermined minimun time interval, and providing a second indication signal when the second frequency signal is determined to be present;

(c) continuing to provide the first indication signal for a predetermined time interval after the conclusion of the first frequency signal;



(d) determining that the first and second indication signals are coincidentally present for at most a predetermined maximum time interval, and providing a coincidence signal when both the first and second indication signals are coincidentally present; and

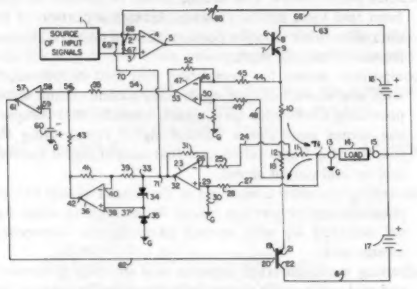
(e) providing an output signal indicating that the first frequency signal and the second frequency signal have been detected if the second indication signal is present for a predetermined minimum time interval after the conclusion of the coincidence signal.

4,207,475

EFFICIENT BIPOLAR REGULATED POWER SUPPLY

Sarkis Nercessian, Flushing, N.Y., assignor to Kepco, Inc., Flushing, N.Y.

Filed Jul. 31, 1978, Ser. No. 929,308
Int. Cl.[2] G05F *1/56*
U.S. Cl. 307—52 **3 Claims**



1. In a bipolar regulated power supply the combination of;

a pair of load terminals;

a first circuit connected across said load terminals including, in series a source of voltage of one polarity, a first signal controllable pass device, a first current sensing resistor and a second current sensing resistor;

a second circuit connected across said load terminals including in series, a source of voltage of a second polarity, a second signal controllable pass device, a third current sensing resistor having a value equal to said first current sensing resistor and said second current sensing resistor;

means for controlling said first signal controllable pass device including a source of input signals and a load voltage or current feedback circuit;

and means for maintaining a substantially constant quiescent current through both of said pass devices in addition to bipolar current to said load terminals if any;

wherein said means for maintaining a substantially constant quiescent current includes two interdependent control circuits coupled to control said second pass device, one including means for sensing the voltage across said first and third current sensing resistors taken in series and the second including means for sensing the voltage across said second current sensing resistor;

means for repeating the absolute value of the latter said voltage;

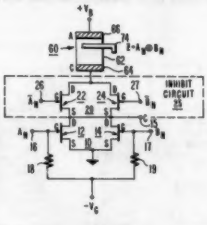
and means for combining said first said sensed voltage and said repeated voltage to provide said control to said second pass device.

4,207,476

EXCLUSIVE OR CIRCUIT

Lakshminarasimha C. Upadhyayula, East Windsor, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 10, 1978, Ser. No. 932,622
Int. Cl.[2] H03K *19/32, 19/08*
U.S. Cl. 307—216 **9 Claims**



1. An exclusive OR circuit comprising in combination:

a pair of field effect transistors (FETs) each having a drain electrode, a source electrode, and a gate electrode, said source electrodes being coupled together, said drain electrodes being coupled together, each of said gate electrodes being coupled to a different input terminal, each input terminal being adapted to receive a logic signal of a first or second polarity;

a transferred electron type device (TELD) connected to said pair of FETs to pass series current therethrough, said TELD being characterized by the formation of a domain upon the application of an electric field above a threshold value, said device having a peak current at said threshold value and a lower current above said threshold value, said lower current being substantially constant with increasing voltage;

said pair of FETs being biased to operate at a constant current region such that said drain current is below said peak current and above said lower current of said device;

means for applying an input signal of a given polarity of said first and second polarities to the gate electrode of at least one of said pair of FETs to increase the drain current of said pair of FETs to a level equal to or greater than said peak current of said TELD causing thereby the formation of said domain in said TELD; and

an inhibit circuit also arranged to pass series current with said pair of FETs and said TELD, said inhibit circuit having first and second input terminals adapted to receive, respectively, a signal indicative of the polarity of input signals being applied to said input terminals of said pair of FETs and responsive to both said logic pulses being of said given polarity for preventing said peak current through said TELD to thereby prevent domain formation therein.

4,207,477

BULK CHANNEL CCD WITH SWITCHABLE DRAINING OF MINORITY CHARGE CARRIERS

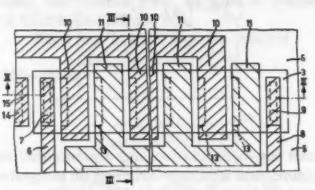
Leonard J. M. Esser, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 789,211, Apr. 20, 1977, abandoned, which is a continuation of Ser. No. 616,866, Jun. 25, 1975. This application Jun. 7, 1978, Ser. No. 913,444

Claims priority, application Netherlands, Oct. 8, 1974, 7413207

Int. Cl.[2] G11C *19/28;* H01L *29/78*

U.S. Cl. 307—221 D 11 Claims



1. A semiconductor charge coupled device having a semiconductor body comprising a surface-adjoining semiconductor layer of one conductivity type which has a thickness and a doping at which a depletion zone can be obtained throughout the thickness of the layer by means of an electric field while avoiding breakdown, means for isolating the semiconductor layer, means for locally introducing into the semiconductor layer information in the form of charge packets containing majority charge carriers, means for reading out said information elsewhere in the semiconductor layer, an electrode system having a plurality of electrodes insulated from the semiconductor body by an intermediate insulating layer present at the surface of the semiconductor layer for capacitively generating electric fields in the semiconductor layer in response to clock voltages applied to the electrodes by means of which the charge can be transported in a direction of charge transport toward the read out means through the layer in a direction parallel to the layer, the semiconductor body furthermore comprising a plurality of barrier surface zones of a second conductivity type opposite to said one conductivity type present below the insulating layer and adjoining the semiconductor layer surface, said barrier surface zones extending at least partly below the electrodes and by means of which said charge packets can be isolated from each other, and switchable means for draining minority carriers from the layer and comprising in the semiconductor body a further surface region of the second conductivity type which extends parallel to the layer in the semiconductor body, adjoins the semiconductor layer, is adjacent but spaced from said barrier surface zones, and has an electrical connection, the insulated electrodes serving as control elements for said switchable means and extending to above said further surface region and the space between the latter and the barrier surface zones, the device construction being such that, when clock voltages are applied in the operating condition to the insulated electrodes, field-induced electric connections can be formed in the body between said further surface region and said barrier surface zones to enable said switchable means and cause minority carriers to be drained from the layer via a flow path, including said switchable means, through said barrier surface zones, the field-induced connections to said further surface region, the further surface region and its electrical connection.

4,207,478

DC CHOPPER DEVICE

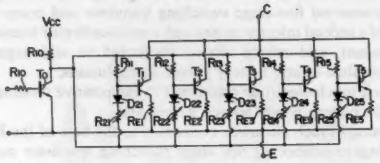
Katsuji Marumoto, Hitachi; Schigeru Kuriyama, Katsuta, and Tsutomu Omae, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed May 8, 1978, Ser. No. 903,610

Claims priority, application Japan, May 11, 1977, 52-53179

Int. Cl.[2] H03K *17/60, 17/56*

U.S. Cl. 307—240 6 Claims



1. A DC chopper device comprising a DC power source, a plurality of power transistors connected in series with a controlled unit driven by said DC power source, said power transistors being connected in parallel with each other for individually making the chopping operation, chopper control means for controlling the chopping operation of said power transistors, and base drive circuit means connected between said chopper control means and the bases of said power transistors, wherein said base drive circuit means comprises:

(1) a plurality of first impedance means for determining the values of turn-on base currents supplied to said power transistors so as to provide substantially equal collector currents for said power transistors in the turn-on state of said power transistors;

(2) a plurality of second impedance means for determining the values of turn-off base currents so as to substantially simultaneously turn off said power transistors in response to the cessation of supply of the turn-on base currents to said power transistors; and

(3) current flow blocking means for blocking current flow through said second impedance means while the turn-on base currents are being supplied to the bases of said power transistors through said first impedance means respectively.

4,207,479

TOUCH SENSITIVE SWITCH ARRANGEMENT WITH AN I²L STRUCTURE

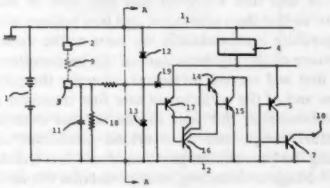
Keizo Yamamoto, Nara, Japan, and Charles C. Austin, Huntington Beach, Calif., assignors to Sharp Kabushiki Kaisha, Osaka, Japan and Hycom Incorporated, Irvine, Calif.

Filed Jun. 24, 1977, Ser. No. 809,892

Claims priority, application Japan, Jun. 24, 1976, 51-75038

Int. Cl.[2] H03K *17/00, 3/26*

U.S. Cl. 307—308 12 Claims



1. A touch sensitive switch comprising:

a battery power source means having positive and negative terminals;

a current limiter means connected to said positive terminal of said battery power source means;

a first injector means driven by said current limiter means for providing a constant current output;

Darlington connected first-stage and second-stage switching transistor means having base and emitter regions, said transistor means being supplied with current from the injector means, the emitter region of said Darlington connected second stage switching transistor means being connected to said negative terminal of said battery power source means;

a current mirror circuit means energizing said Darlington connected first-stage switching transistor and comprised of a second injector means and a multi-collector transistor means, said mirror circuit connected to said negative terminal of said battery power source means;

a first touch electrode connected to the positive terminal of the battery power source means; and

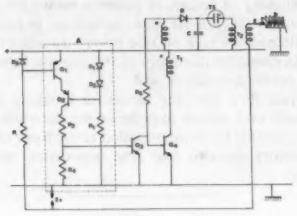
a second touch electrode connected to the base of the Darlington connected first-stage switching transistor means said second touch electrode maintaining electrical isolation from the first touch electrode.

4,207,480

D.C. AMPLIFIER WITH IMPROVED CHARACTERISTICS WITH RESPECT TO TEMPERATURE

Bernard J. Simeau, Le Puy, France, assignor to Constructions Electriques, R.V., Le Puy, France

Filed Jun. 7, 1978, Ser. No. 913,338
Claims priority, application France, Jun. 16, 1977, 77 18481
Int. Cl.[2] H01H *37/32*; H03F *3/04*
U.S. Cl. 307—308 **7 Claims**



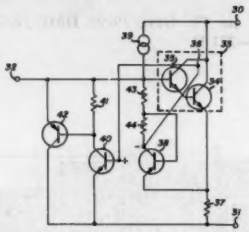
3. A D. C. amplifier for amplifying low level current, comprising an input stage having first and second cascode mounted bipolar transistors of the same polarity, said first transistor being common emitter connected and its base constituting the input connection of said amplifier, a bias circuit adapted to supply a bias voltage to the base of said second transistor, said bias circuit including two series connected diodes forwardly biased by a direct current, said diodes connected between the emitter of said first transistor and said base of said second transistor so that the variation of said bias voltage with respect to temperature is substantially the same as the variation with temperature of the algebraic sum of the base-emitter voltages of said first and second transistors whereby the potentials of said base and of the collector of said first transistor are maintained substantially the same as one another over a selected temperature range, and an overload protection circuit for protecting the base-emitter junction of said first transistor from reverse voltage overloading, said protection circuit including at least a first semi-conductor protection diode having one connection thereof connected to said base of said first transistor and the other connection thereof maintained at a potential substantially the same as said base of said first transistor, said first diode oriented reversely to said base-emitter junction of said first transistor.

4,207,481

POWER IC PROTECTION BY SENSING AND LIMITING THERMAL GRADIENTS

Robert C. Dobkin, Hillsborough, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 27, 1977, Ser. No. 846,053
Int. Cl.[2] H03K *3/26*; G01K *7/00*
U.S. Cl. 307—310 **4 Claims**



1. A circuit for incorporation into a monolithic integrated circuit structure, said structure including an integrated circuit chip mounted in heat exchange relation with an associated mounting, said circuit comprising:

power dissipating circuit element means;

thermocouple means having a hot junction associated in thermal proximity to said power dissipating means and a cold junction located in lesser thermal proximity to said power dissipating means with said cold junction being connected to a pair of circuit terminals whereby said thermocouple means produces a potential difference between said terminals that is a function of the thermal gradient between said hot and cold functions;

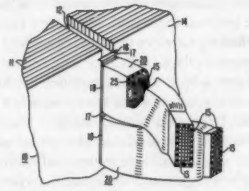
control circuit means coupled to said thermocouple terminals to be responsive to said potential difference and coupled to said power dissipating means to control the power dissipated therein whereby said power dissipated is limited in response to the output of said thermocouple means.

4,207,482

MULTILAYERED HIGH VOLTAGE GRADING SYSTEM FOR ELECTRICAL CONDUCTORS

Charles L. Neumeyer, East Windsor, N.J., and Herbert E. Pietsch, Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 14, 1978, Ser. No. 960,691
Int. Cl.[2] H02K *15/12*
U.S. Cl. 310—45 **10 Claims**



1. An insulated electrical member adapted for high voltage use having in combination, an electrical member, electrical insulation disposed about said member and a conducting varnish covering a portion of the insulation, wherein an abrasion resistant stress grading system covers at least part of the conducting varnish, the stress grading system comprising: (1) a first base layer of resinous paint comprising non-linear silicon carbide particles having a resistivity value of between 2,000 to 4,000 Meg. Ohm/Square, in contact with the conducting var-

nish, (2) a second overlapping layer of resinous paint comprising non-linear silicon carbide particles having a resistivity value of between 4,000 to 6,000 Meg. Ohm/Square and containing at least one fibrous support therein, covering at least a part of the first base layer and (3) an overcoat of an arc and track-resistant resinous insulating varnish; wherein, at the point of overlap of the silicon carbide layers, the thickness ratio of the base silicon carbide layer:overlapping silicon carbide layer is from 1:1 to 1:15.

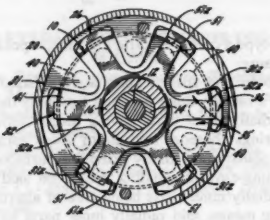
2. The insulated electrical member of claim 1, being an electrical coil.

4,207,483

STEP MOTOR WITH CIRCUMFERENTIAL STATORS ON OPPOSITE SIDES OF DISC-LIKE ROTOR

John S. Baer, Bar Harbor, Me., assignor to Warner Electric Brake & Clutch Co., Beloit, Wis.

Filed Sep. 1, 1978, Ser. No. 938,925
Int. Cl.² H02K *37/00*
U.S. Cl. 310—49 R **22 Claims**



1. A step motor comprising

a rotor member and a stator member aligned on a common axis,

one of said members having two pairs of interdigital pole teeth extending perpendicularly to said axis, said two pairs of pole teeth being axially spaced from each other with the inner pole teeth in each pair spaced both radially and circumferentially from the outer pole teeth in that pair,

a pair of coils each of which is associated with one of said pairs of interdigital pole teeth for magnetizing the inner and outer pole teeth in that pair with opposite polarities when the coil is energized, and

the other of said members having multiple permanent magnets spaced circumferentially from each other and located axially between said two pairs of interdigital pole teeth so that energization of either coil draws said permanent magnets into register with a selected pair of interdigital pole teeth, said permanent magnets being polarized in the axial direction with each adjacent pair of said permanent magnets being polarized in opposite directions.

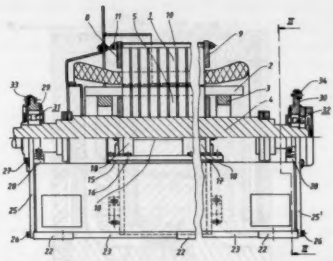
4,207,484

SUPPORT APPARATUS FOR AN ELECTRICAL ROTARY MACHINE

Wolfgang Krecker, Vasteras, Sweden, assignor to ASEA Aktiebolag, Vasteras, Sweden

Filed Mar. 15, 1978, Ser. No. 886,719
Claims priority, application Sweden, Mar. 18, 1977, 7703097
Int. Cl.² H02K *5/00*
U.S. Cl. 310—91 **2 Claims**

1. A rotary electrical machine of at least 100 kW comprising a stator with a laminated stator core, two press rings and a plurality of draw bolts arranged therebetween, and a rotor surrounded by the stator core and furnished with a horizontal shaft, said machine being supported by a substantially rectangular frame with two axially oriented frame portions supporting said stator and two transversal frame portions connecting said axially oriented portions with each other and supporting said rotor, each of said axially oriented frame portions being a tubular, hollow sheet metal beam provided with vertical end surfaces, lower parts of said hollow beams being provided with horizontal footing surfaces, and upper parts of said hollow beams being provided with supporting surfaces lying in a horizontal plane and supporting said stator, the lowest point of said press rings being located below said supporting surfaces and at a vertical distance (h) therefrom which is greater than half the distance between these and said footing surfaces, each of said transversal frame portions being a vertical wall,



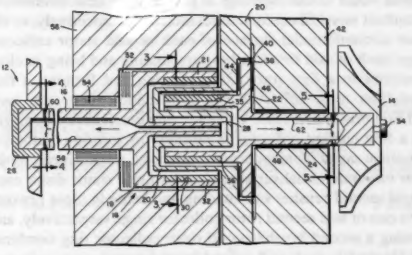
the thickness of which is less than one-half of the average thickness of one of said tubular beams, each of said walls being arranged at two of said vertical end surfaces and in rigid mechanical connection with said hollow beams, at least one of said end walls being detachably attached to the hollow beams by means of a plurality of screw bolts, each rotor bearing being surrounded by a bearing housing supported by a said wall, said bearing housing being arranged by means of a plurality of horizontal screw bolts in frictional connection with a vertical surface of the wall.

4,207,485

MAGNETIC COUPLING

Alexander Silver, Tarzana, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Apr. 24, 1978, Ser. No. 899,668
Int. Cl.² H02K *5/00, 49/00*
U.S. Cl. 310—104 **28 Claims**



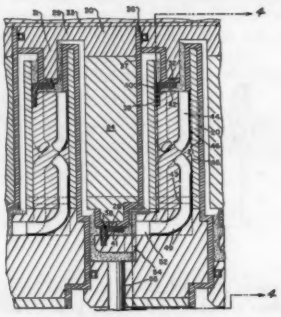
1. A magnetic coupling for coupling rotational motion through a sealed wall comprising rotatable driving means on one side of the wall and including first magnetic means thereon; and rotatable driven means on the side of the wall opposite said driving means and including thereon second magnetic means in magnetic coupling relation with said first magnetic means, each of said rotatable means being disposed in a respective region of process fluid and each including axial and radial passages for centrifugally establishing circulation of the associated process fluid over the magnetic means thereon.

4,207,486

METHOD AND APPARATUS FOR LIQUID METAL CIRCULATION IN AN ACYCLIC MACHINE

Burton D. Hatch, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jul. 12, 1978, Ser. No. 924,055
Int. Cl.[2] H02K *31/00*
U.S. Cl. 310—178 8 Claims



1. In an acyclic electrodynamic machine having; a hollow shaft mounted for rotation about an axis; a plurality of annularly-shaped electrically conductive rotor disks each mounted concentrically with said shaft and connected thereto by an electrically conductive rotor disk mounting ring; a first electrically conductive rotor collector ring surrounding and attached to the outer circumferential surface of each of said rotor disks; a plurality of annularly-shaped electrically conductive stator disks interleaved with said rotor disks; each of said stator disks being mounted concentrically within one of a plurality of electrically conductive stator mounting rings; each of said stator mounting rings having an annular stator collector ring formed thereon and disposed circumferentially around one of said first rotor collector rings; each of said rotor disk mounting rings having an annularly-shaped portion extending in the axial direction radially-inward of a stator disk, and constituting a second rotor collector ring; a plurality of first conductive compliant metal filament brushes attached, respectively, to the inner circumferential surface of each of said stator collector rings; each of said first brushes surrounding and being in close proximity to a first rotor collector ring and forming a first brush/first rotor collector ring combination therewith; each said first brush/first rotor collector ring combination comprising a first current collector; a plurality of second conductive compliant metal filament brushes attached, respectively, to the inner circumferential surface of each of said stator disks; each of said second brushes surrounding and being in close proximity to one of said second rotor collector rings, respectively, and forming a second brush/second rotor collector ring combination therewith; each said second brush/second rotor collector ring combination comprising a second current collector; each of said current collectors being completed by conductive liquid metal disposed between the brush and rotor collector ring portions thereof; the improvement comprising:

at least one pair of circulation paths disposed internally of each of said stator disks for the transport of liquid metal from a given first current collector to a given second current collector through one of said pair of circulation paths and from said given second current collector to said given first current collector through the other of said pair of circulation paths.

4,207,487

ELECTRIC MACHINE

Hartwig Beyersdorf, Konsulweg 28, 2409 Scharbeutz, Fed. Rep. of Germany

Continuation of Ser. No. 98,385, Dec. 15, 1970, abandoned. This application Oct. 8, 1976, Ser. No. 731,045
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1969, 1965355
Int. Cl.[2] H02K *1/22*
U.S. Cl. 310—268 8 Claims

1. A disc-type dynamo-electric machine, especially a generator, comprising:

two opposed and spaced apart annular stator yokes each having a radially inner part and a radially outer part, only said radially outer parts having means defining opposed stator rings thereon, said stator rings each having opposed, planar and radially extending surfaces thereon and alternating-current winding means on said stator rings, said radially inner parts being free of alternating-current winding means, said radially inner parts having substantially axially facing, opposed, smooth and concave surfaces thereon;

two annular energizing windings, one each being mounted on said stator yokes in a location between and mutually adjacent to said radially inner parts and said radially outer parts; and

a rotor of good magnetic conductivity mounted in the spacing between said two annular stator yokes and having a hub with a greater axial dimension than at the radially outer portion of said rotor and a uniform strength characteristic, said hub being positioned between said radially inner parts of said stator yokes and having a pair of oppositely facing smooth and convex surfaces opposing said smooth and concave surfaces on said radially inner parts of said stator yokes to define a pair of non-planar and uniform auxiliary air gaps therebetween, the radially outer portion of said rotor being that part which extends between said two annular energizing windings and said stator rings, said radially outer portion of said rotor having circumferentially alternating ribs and grooves on both axially facing surfaces, said ribs and grooves extending radially coextensively with said stator rings, the surfaces of said ribs being parallel to said surfaces on said stator rings to define a pair of planar active air gaps therebetween, the area of each of said auxiliary air gaps being generally as large as the sum of the surfaces of the ribs on the rotor facing one of said active air gaps.

4,207,488

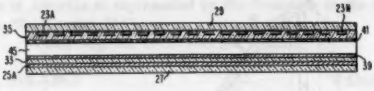
DIELECTRIC OVERCOAT FOR GAS DISCHARGE PANEL

Mohamed O. Aboelfotoh, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1977, Ser. No. 811,745
Int. Cl.[2] H01J *61/30*
U.S. Cl. 313—221 9 Claims

1. In a gaseous discharge display/memory device characterized by an ionizable gaseous medium in a gas chamber formed by a pair of dielectric material bodies having opposed wall charge storage surfaces,

the improvement wherein each dielectric surface is coated with an electron emissive substance to provide low operating voltage, refractory properties and stable operating margins,



said electron emissive substance being selected from a combination of lithium and one Group IIA oxide.

4,207,489

MOVABLE EXTRACTION ELECTRODE FOR AN ION SOURCE

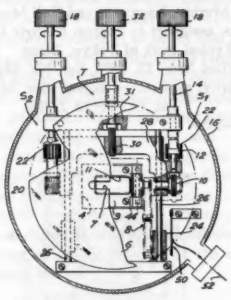
Jean Camplan, Paris; Jacques Chaumont, Fontenay le Fleury, and Robert Meunier, Bonnelles, all of France, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly-sur-Seine, France

Filed Nov. 28, 1978, Ser. No. 964,294

Claims priority, application France, Nov. 28, 1977, 77 35758

Int. Cl.² H01J *1/94, 27/00;* **H05H** *1/00*

U.S. Cl. 313—363 **3 Claims**



1. A movable extraction electrode for an ion source, of the type consisting of a metallic screen pierced by an opening and placed within a vacuum chamber in front of an ion source, said screen being brought to a negative potential with respect to said source, wherein said electrode is provided with mechanical means for controlling the displacement of the electrode from the exterior of the chamber, said means being constituted by two systems for displacing the two lateral sides of the screen independently and each system aforesaid being constituted by:

a deformable parallelogram having two parallel arms pivotally attached at one end to a member for supporting one side of the screen and at the other end to a member which is slidably mounted on a guide column, said column being parallel to said side;

means for controlling the deformation of said parallelogram and comprising: a link-arm pivotally mounted at one end on one of the arms and mounted at the other end on a toothed wheel disposed in meshing engagement with an endless screw coupled to a rod which passes through said chamber.

4,207,490

SHADOW MASK HAVING APERTURES DIVIDED INTO SYMMETRICAL HALVES BY ISOLATED CONDUCTORS

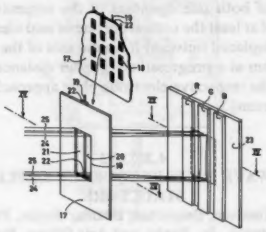
Robert F. L. M. Van der Ven, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 6, 1978, Ser. No. 893,951

Claims priority, application Netherlands, Apr. 15, 1977, 7704130

Int. Cl.² H01J *29/07*

U.S. Cl. 313—403 **2 Claims**



1. A colour display tube comprising, in an evacuated envelope, means for generating a plurality of electron beams, a display screen having a plurality of elongated regions luminescing in different colours when struck by said electron beams, said regions being arranged so that the longitudinal axes thereof are substantially parallel to each other, and colour selection means positioned in the path of said beams between said generating means and said screen for directing each of said beams to regions luminescing in a given colour, said colour selection means including an electrically conductive plate having a plurality of apertures for passing said beams therethrough and a plurality of elongated conductors secured to and electrically insulated from said plate, each of said conductors extending across at least one of said apertures in a direction generally parallel to said longitudinal axes and dividing said at least one aperture into two substantially symmetrical halves so that upon application of a potential difference between said plate and said conductors electric fields are produced in each of the apertures which deflect the portions of said beam passing through the respective halves of a given aperture towards each other in a direction generally perpendicular to said longitudinal axis so that a single, overlapping spot of a dimension in a direction perpendicular to said longitudinal axes smaller than the corresponding dimension of said aperture is formed from said portions of said beam on said display screen.

4,207,491

ELECTRON GUN ASSEMBLY

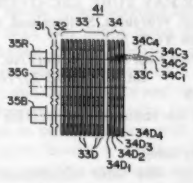
Shinpei Koshigoe, Fukaya, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 23, 1978, Ser. No. 889,506

Claims priority, application Japan, Mar. 28, 1977, 52-33336

Int. Cl.² H01J *29/51*

U.S. Cl. 313—412 **6 Claims**



1. An in-line type electron gun assembly for color picture tube emitting a central electron beam and side electron beams

running along both sides of the central electron beam comprising:

a main convergence electrostatic lens formed by a pair of serially arranged electrode means whose components are formed integrally to handle the respective electron beams;

at least one of the paired electrode means being a composite electrode consisting of a plurality of parallel mounted electrode plates each bored with three openings, one of said electron beams passing through each of said openings, respectively; and

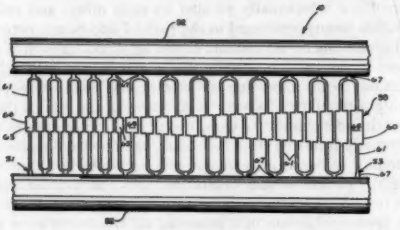
the axes of both side openings of the respective electrode plates of at least the composite one of said electrode means being displaced outward from the axis of the central electron beam at a progressively greater distance as the position of the respective electrode plate approaches the phosphor screen.

4,207,492

SLOW-WAVE HIGH FREQUENCY DEFLECTION STRUCTURE

William H. Tomison, Beaverton; Bozidar Janko, Portland; Myron A. Bostwick, Jr., Banks, and Aris Silzars, Portland, all of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Continuation of Ser. No. 802,109, May 31, 1977, abandoned.
This application Aug. 7, 1978, Ser. No. 931,656
Int. Cl.[2] H01J *23/16, 29/96*
U.S. Cl. 315—3 **11 Claims**



1. A deflection structure for a cathode-ray tube having means therein for producing a beam of electrons, said structure comprising

a serpentine meanderline of conductive material along which deflection signals travel, said meanderline being formed by a plurality of plate segments disposed in spaced edge-to-edge relation in a row extending generally along the path of said beam and serially interconnected generally U-shaped strips of substantially narrower width, said strips extending angularly away from the plane of each segment, and

means supporting the meanderline in said tube, said means comprising a pair of insulating rods extending in the direction of said path, one along each side of said row, and means for securing said strips to said rods.

4,207,493

CATHODE RAY TUBE ARC-OVER PROTECTION

Gerhard Förster, Würenlos, Switzerland, assignor to RCA Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 946,017
Int. Cl.[2] H01J *23/16*
U.S. Cl. 315—3 **8 Claims**

1. A system for reduced arc-over for a cathode ray tube, comprising:

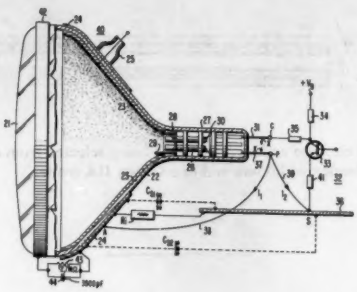
a cathode ray tube;

a cathode ray tube ultor capacitance with high voltage termination means and with ultor current return termination means;

an electron gun structure coupled to said ultor capacitance;

energizing circuitry coupled to said electron gun structure; and

current damping means connected between said ultor current return termination means and a common current return terminal within said energizing circuitry for damping current oscillations within said electrical circuitry during cathode ray tube arc-over.

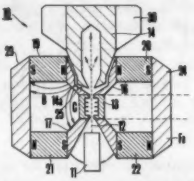


4,207,494

MICROWAVE TUBES PROVIDED WITH PERMANENT MAGNET TYPE MAGNETIC CIRCUITS

Fujio Hatakenaka; Hisaaki Sato; Isamu Tsuchiya, all of Tokyo; Shigemoto Murata, Nagasaki, and Yoji Morishita, Kawasaki, all of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Hoso Kyokai, both of Tokyo, Japan

Filed Mar. 22, 1978, Ser. No. 889,119
Claims priority, application Japan, Mar. 24, 1977, 52/33067
Int. Cl.[2] H01J *23/08*
U.S. Cl. 315—5.35 **7 Claims**



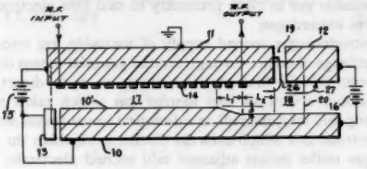
1. A microwave tube provided with a permanent magnet type magnetic circuit, comprising an electron gun for emitting an electron beam, a high frequency circuit unit for causing an interaction between said electron beam and input high frequency wave, a hollow cylindrical collector for collecting the electron beam which has been subjected to said interaction, said electron gun, said high frequency circuit unit and said collector being aligned in the axial direction of said tube, and a magnetic circuit for producing an axial magnetic flux of one polarity through said high frequency circuit unit for focusing said electron beam, said magnetic circuit including a permanent magnet and a pair of pole pieces arranged at the opposite ends of said high frequency circuit unit, and leakage flux generating means for generating leakage magnetic flux acting upon said electron beam near an entrance of said collector, said leakage magnetic flux being produced by said magentic circuit and forming a focussing peak having the same polarity with respect to said electron beam near the entrance to said collector as said axial magnetic flux.

4,207,495

MEANS FOR IMPROVING THE COLLECTOR EFFICIENCY OF AN EMITTING SOLE CROSSED FIELD AMPLIFIER

Hunter L. McDowell, Concord, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 30, 1978, Ser. No. 938,128
Int. Cl.[2] H01J *25/34*
U.S. Cl. 315—39.3 4 Claims



1. An emitting sole crossed field amplifier comprising an anode structure, an anode slow wave circuit on said anode structure having an input receiving an r.f. signal, and an output,

an emitting sole cathode having a main secondary emitting surface, said emitting sole cathode being in spaced adjacent relationship to said anode slow wave circuit and establishing an interaction region between its main secondary emitting surface and said slow wave circuit, said emitting sole cathode being configured to provide increased main secondary emitting surface to slow wave circuit spacing extending from a tapered transition section through the output end of said anode slow wave circuit,

a depressed collector spaced from and adjacent said anode structure at the output end of said slow wave circuit and further being spaced from and adjacent said emitting sole cathode, said collector in part defining a channel between itself and said anode structure and also defining a channel between itself and said emitting sole cathode,

a power supply connected to and effecting emission of electrons from said emitting sole cathode, and

magnetic field means establishing a magnetic field in said interacting region and effecting electron flow there along, said magnetic field means further being configured to establish a cut off condition along a limited portion of the collector-anode channel and also establishing a cut off condition along a limited portion of the collector-sole emitting cathode channel.

4,207,496

MICROWAVE OUTPUT SECTION OF AN INTERNAL MAGNET TYPE MAGNETRON

Kaichiro Nakai, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 21, 1978, Ser. No. 944,550
Claims priority, application Japan, Sep. 27, 1977, 52-129755[U]
Int. Cl.[2] H01J *25/50*
U.S. Cl. 315—39.53 7 Claims

1. A magnetron comprising:

anode means including an anode cylinder and vanes projecting from the inner wall of the anode cylinder toward the axis of the anode cylinder, defining resonance cavities;

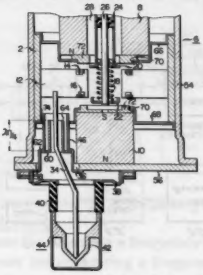
a cathode disposed coaxially with the axis of the anode cylinder;

first and second permanent magnets which are oppositely disposed, generating a magnetic field in a first space between said anode means and cathode, said first magnet having a thickness defined by the distance from the bottom of said anode cylinder to the surface of said first magnet facing said first space;

sealing means for hermetically sealing said permanent magnets, said anode means, said cathode and said first space;

a microwave output section mounted on said sealing means;

an output conductor, connected to one of said vanes and said output section, passing through a second space between said first magnet and said sealing means; and



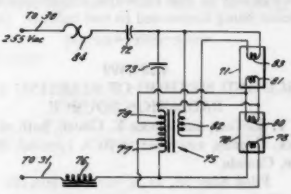
a metal tube through which said output conductor extends, said tube being connected electrically to said anode cylinder and extending into said second space a distance equal to approximately 70% or more of said first magnet thickness.

4,207,497

BALLAST STRUCTURE FOR CENTRAL HIGH FREQUENCY DIMMING APPARATUS

Dennis Capewell, Easton; David G. Luchaco, Macungie, and Joel S. Spira, Allentown, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 5, 1978, Ser. No. 966,601
Int. Cl.[2] H05B *41/26, 41/392*
U.S. Cl. 315—96 55 Claims

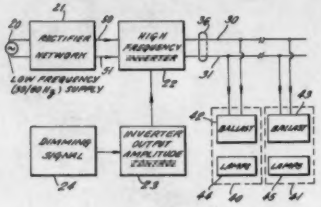


1. An energy conserving illumination control circuit comprising, in combination: a ballast circuit having first and second input leads; a source of input energy having a frequency in excess of about 600 Hz connected to said first and second input leads; gas-filled lamp means to be energized from said source with the current through said lamps being limited by said ballast circuit; said ballast circuit consisting of at least one capacitor and at least one inductor connected in series relationship with one another; said one capacitor and said one inductor being resonant at a frequency close to the frequency of said source and connected in circuit relation with said gas-filled lamp means; said source having a substantially continuous wave form and having a variable amplitude; said ballast circuit permitting dimming of said lamp means to less than 50% of the full lamp intensity and exhibiting a power factor of greater than about 0.8 under all dimming conditions.

4,207,498
SYSTEM FOR ENERGIZING AND DIMMING GAS DISCHARGE LAMPS

Joel S. Spira, Allentown; Dennis Capewell, Easton, and David G. Luchaco, Macungie, all of Pa., assignors to Lutron Electronics Co., Inc., Coopersburg, Pa.

Filed Dec. 5, 1978, Ser. No. 966,604
Int. Cl.[2] H05B *41/26, 41/392*
U.S. Cl. 315—97 **42 Claims**

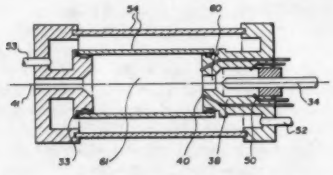


14. An illumination control system for the illumination and dimming of gas discharge lamps; said illumination control system including a ballast circuit for said lamps; a low frequency input supply circuit; a rectifier circuit connected to said input supply circuit; an inverter connected to said rectifier circuit for producing an output at a frequency in excess of about 20 kHz; said inverter comprising first and second series-connected controllably conductive devices each poled in the same direction, respective first and second diodes connected in parallel with said first and second controllably conductive devices respectively and poled to conduct in an opposite direction to the conduction of their respective controllably conductive device and rectifier means for connecting rectified output from said relatively low frequency power source to said series-connected controllably conductive devices; said first controllably conductive device being connected in closed circuit relation with a capacitor, an inductor and transformer means; said capacitor and inductor being resonant at about the frequency of said high power source; and inverter output amplitude control means coupled to the resonant current of said capacitor and inductor for switching said first and second controllably conductive devices on in synchronism with said resonant frequency of said capacitor and inductor; said transformer means being connected to ssid ballasts.

4,207,499
DEVICE AND METHOD OF STARTING A LONG RADIATION SOURCE

Sebastian Y. K. Tam, and Asoke K. Ghosh, both of Dollard des Ormeaux, Canada, assignors to RCA Limited, Ste. Anne-de-Bellevue, Canada

Filed May 15, 1978, Ser. No. 906,194
Claims priority, application Canada, Mar. 16, 1978, 299098
Int. Cl.[2] H05B *41/22;* H01J *61/54*
U.S. Cl. 315—111.1 **14 Claims**



1. A method of creating and maintaining a long electric arc in a discharge chamber, said chamber containing first and second stationary, widely spaced electrodes defining a long arc path therebetween and an auxiliary electrode in close proximity to said first electrode, said method comprising:

(a) creating and maintaining an electrical potential difference between said first and second electrodes;

(b) introducing a first supply of ionizable gas into said discharge chamber through first gas inlet means adjacent said first electrode and said auxiliary electrode;

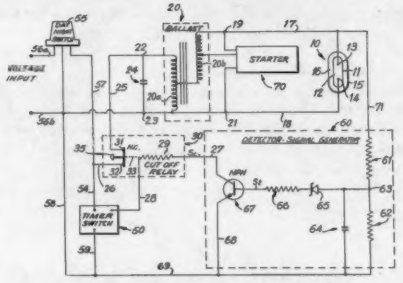
(c) creating an electrical potential difference between said auxiliary electrode and said first electrode sufficient to strike an electric arc therebetween so as to ionize said ionizable gas in close proximity to said first electrode to form ionized gas;

(d) introducing a second supply of ionizable gas into said discharge chamber through second gas inlet means downstream of said first gas inlet means so as to direct and maintain a flow of said ionized gas which takes place along said long arc path in a direction towards said second electrode and which exits the discharge chamber through a gas outlet means adjacent said second electrode; said electrical potential difference being sufficient to create and maintain a long electric arc between said first and second electrodes along said long arc path when a sufficient concentration of ionized gas is present along said long arc path.

4,207,500
CUT-OFF ARRANGEMENT FOR AND METHOD OF PROTECTING A BALLAST-STARTER CIRCUIT FROM HIGH PRESSURE SODIUM LAMP CYCLING MALFUNCTION

George Duve, Washington, and Daniel DiCarlo, Hackettstown, both of N.J., assignors to Area Lighting Research, Inc., Hackettstown, N.J.

Filed Dec. 14, 1978, Ser. No. 969,384
Int. Cl.[2] H05B *41/231, 37/03*
U.S. Cl. 315—119 **18 Claims**



1. In a luminaire of the type having a high pressure sodium lamp, a source of electrical power, and ballast-starter means normally connected to the power source and operative for supplying voltage of predetermined magnitude across the lamp to operate the latter,

a cycling cut-off arrangement for protecting the ballast-starter means from damage in the event of a cycling malfunction wherein the lamp is extinguished and the ballast-starter means applies a voltage of magnitude greater than said predetermined magnitude across the extinguished lamp, comprising

(a) sensor means for detecting the magnitude of the voltage across the extinguished lamp, and for generating an electrical current signal when the magnitude of the voltage across the extinguished lamp reaches a threshold magnitude which is gr han said predetermined magnitude; and

(b) means responsive to the generation of the electrical current signal for disabling the power source from the

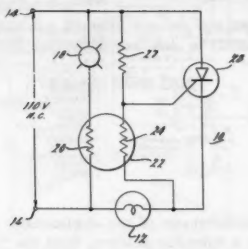
ballast-starter means to thereby protect the latter from damage in the event of a cycling malfunction.

4,207,501

LAMP CONTROL CIRCUIT USING HEATER/THERMISTOR TIME DELAY

Jon M. Smallegan, Farmington Hills, Mich., assignor to Novo Products, Inc., Redford, Mich.

Filed Feb. 23, 1978, Ser. No. 880,613
Int. Cl.[2] H05B *39/04*; H01J *39/12*
U.S. Cl. 315—159 **6 Claims**



1. For a control circuit for controlling current from a current source to a load in accordance with a level of illumination, the control circuit including controlled conduction means having a control electrode and being connected to said current source for conducting in response to a predetermined control signal supplied to the control electrode to supply said current to said load, an improved illumination sensing and delay circuit for delaying the conduction of said controlled conduction means in response to changes in the level of illumination comprising:

sensing means having a resistance that changes in response to the level of illumination at said sensing means;

thermal energy emitting means for emitting thermal energy in response to current therethrough, said thermal energy emitting means being connected in series with said sensing means, said series connection of said sensing means and said thermal energy emitting means being connected across said current source;

a voltage divider comprising a first impedance means connected in series with a temperature responsive resistor, said temperature responsive resistor having a resistance that changes in response to the temperature thereof, said voltage divider being connected across said current source;

said thermal energy emitting means and said temperature responsive resistor being connected in thermal transfer relationship for transfer of thermal energy from said thermal energy emitting means to said temperature responsive resistor; and

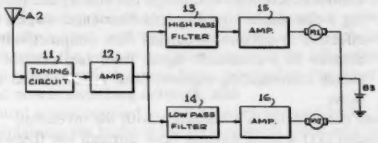
connecting means connecting said control electrode of said controlled conduction means to said voltage divider intermediate said first impedance means and said temperature responsive resistor so that as the illumination level at said sensing means changes, the resistance of said sensing means changes to change the current through said thermal energy emitting means, thereby changing the amount of thermal energy emitted by said thermal energy emitting means, the amount of thermal energy emitted by said thermal energy emitting means being effective to change the temperature of said temperature responsive resistor to in turn change the resistance of the temperature responsive resistor, a predetermined change in said resistance of said temperature responsive resistor causing said predetermined control signal at said control electrode to cause conduction of said controlled conduction means.

4,207,502

MOTOR DRIVING SYSTEM FOR REMOTE CONTROLLED MOBILE TOYS

Yoshihiko Omura, Gotsu, Japan, assignor to Asahi Corporation, Tokyo, Japan

Filed Dec. 27, 1977, Ser. No. 864,805
Int. Cl.[2] B62D *11/04*
U.S. Cl. 318—16 **4 Claims**



1. Apparatus responsive to a frequency modulated radio wave signal comprising:

(a) circuit means for detecting a frequency modulated signal;

(b) circuit means for generating a frequency signal responsive to said frequency modulated signal detected;

(c) at least first and second frequency filter means for receiving the output of the frequency signal, the output signal of said first filter increases when the input frequency increases and decreases when said frequency decreases the output of said second filter decreases when input frequency increases and increases when said frequency decreases, said first filter having at least a portion of its frequency band overlapping the frequency band of said second filter;

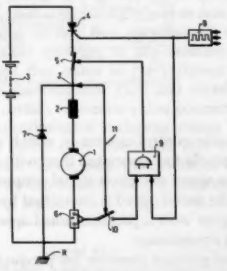
(d) and at least first and second motors, the speed of said first motor responsive to the output signal of said first filter and the speed of said second motor being responsive to the output of said second motor.

4,207,503

BATTERY SUPPLIED MOTOR CURRENT CONTROL SYSTEM WITH SAFETY CIRCUIT

Heinz Irschik; Dieter Kipp, both of Vaihingen, and Helmut Harer, Remseck, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 28, 1978, Ser. No. 928,794
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1977, 2736304
Int. Cl.[2] H02P *3/00*
U.S. Cl. 318—139 **5 Claims**



1. Battery supplied motor cu-rent control system having a motor (1);

a controlled switch (4) serially connected in the current supply to the motor;

control circuit means (8) responsive to a pulse command signal and providing a control pulse output, connected to and commanding repetitive conduction and blocking of current flow through the controlled switch (4);

a disconnect switch (5) connected in series circuit with the motor (1);

a free-wheeling diode (7) connected in circuit with the motor and carrying current during blocking of said controlled switch (4);

safety circuit means (5, 6, 9) sensing (a) actual current flow through the motor (b) said control signal means pulse output provided by said control circuit means which controls current flow through the motor, and (c) providing a disconnect signal to said disconnect switch (5) and effective to disconnect current flow conjunctively in the absence of a command signal from said control circuit means commanding current flow AND sensed current flow;

and comprising, in accordance with the invention,

means (11) sensing current flow through the freewheeling diode (7) and

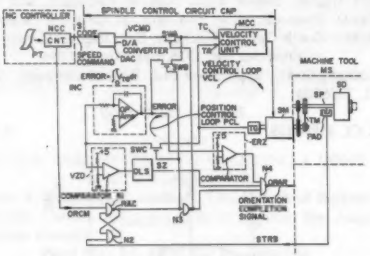
means (10) responsive to said sensed current flow through the free-wheeling diode overriding said disconnect signal to prevent providing said disconnect signal upon presence of circulating inductive current through the motor and the free-wheeling diode during pulse gaps in said command signal.

4,207,504

SPINDLE CONTROL SYSTEM

Shigeki Kawada; Yoshiki Fujioka, both of Hino, and Mitsuhiko Hirota, Tokyo, all of Japan, assignors to Fujitsu Fanuc Limited, Tokyo, Japan

Filed Sep. 7, 1978, Ser. No. 940,334
Claims priority, application Japan, Sep. 8, 1977, 52-108665
Int. Cl.[2] G05B *13/00*
U.S. Cl. 318—561 **1 Claim**



1. A spindle control system in which a spindle motor for driving a spindle has associated therewith a speed detector for producing a speed detection signal proportional to the motor speed and the motor speed is controlled by the speed detection signal to agree with a predetermined speed command signal, said system comprising:

a specified position detector for producing a specified position signal when the spindle assumes a specified rotational position during its rotation; and

an integrator circuit for integrating the speed detection signal;

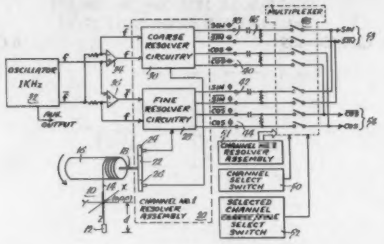
wherein when to stop the spindle at a predetermined position, the integrator circuit is actuated in response to the specified position signal, and the output signal from the integrator circuit is used, in place of the speed command signal, to achieved positioning control of the spindle.

4,207,505

MEASURING SYSTEM

Peter L. Falck, Rockford, Ill., and Edmund M. Hamlin, Jr., Lancaster, Calif., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 9, 1977, Ser. No. 794,984
Int. Cl.[2] G05B *11/18*
U.S. Cl. 318—595 **1 Claim**



1. In the measurement of the displacement of a machine element from a reference position, from the SIN and COS outputs of coarse and fine rotary resolvers each having a shaft connected with said machine element, and subject to ambiguities from misalignment of the resolvers at the 0°/360° position of the fine resolver, the method for determining the angular position of the coarse resolver which comprises:

determining whether the position of the fine resolver is between 0° and 180° or between 180° and 360°;

combining a constant with the angle of the coarse resolver, the constant having a sign dependent on the position of the fine resolver, to establish a corrected coarse resolver position;

calculating the integral number of revolutions of the fine resolver with respect to the reference position, from the corrected coarse resolver position;

adding to the integral number of fine resolver revolutions the fine resolver position; and

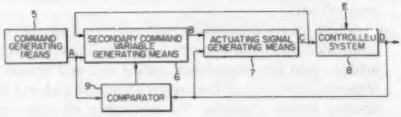
calculating from said last mentioned sum the displacement of the machine element from the reference position.

4,207,506

SERVO SYSTEM WITH REDUCTION OF TRANSIENT ERROR AND SETTLING TIME

Hisashi Sasaoka, and Akira Nagayama, both of Tokyo, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jan. 18, 1979, Ser. No. 4,570
Claims priority, application Japan, Jan. 31, 1978, 53-9597
Int. Cl.[2] G05B *5/01*
U.S. Cl. 318—620 **7 Claims**



1. A servo system comprising

a command generating means,

a secondary command variable generating means for generating a secondary command variable by adding an actuating signal to the command,

an actuating signal generating means for generating said actuating signal by subtracting from said secondary command variable a controlled variable which represents the output of a controlled system, said actuating signal being applied to said controlled system,

a comparator means adapted to compare said command with said controlled variable, whereby when said controlled variable approaches said command, a coincidence signal is delivered from said comparator means to said secondary command variable generating means so as to change the output of said secondary command variable generating means.

4,207,507

ELECTRONIC CONTROLLER

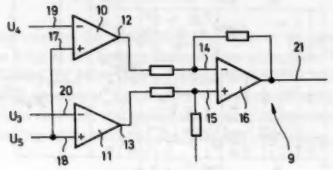
Eduard Hermle, Kirchstrasse 20D, 7303 Neuhausen a.d.F., Fed. Rep. of Germany

Filed Apr. 14, 1978, Ser. No. 896,609

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717178

Int. Cl.[2] G05B *1/06*

U.S. Cl. 318—665 **28 Claims**



1. A device for generating electrical control signals comprising:

a potentiometer having variable electrical resistance, at least one input terminal, a plurality of output terminals and a plurality of arms in spaced relation;

a source of operating voltage connected to said input terminal;

first means connected to said potentiometer for varying the resistance of said potentiometer and providing a first signal at one of said output terminals which varies in response to the resistance of said potentiometer;

first supply means for providing a second signal for comparison with said first signal;

second supply means for providing a third signal for comparison with said first and second signals; and,

second means for comparing said first, second and third signals and for providing a control signal having a magnitude dependent on an instantaneous relationship of said first, second and third signals.

4,207,508

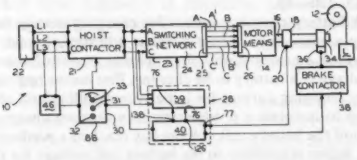
VARIABLE SPEED MOTOR CONTROL SYSTEM

Victor J. Habisohn, 252 Englewood Rd., Hoffman Estates, Ill. 60195

Filed Apr. 14, 1977, Ser. No. 787,348

Int. Cl.[2] H02P *3/04*

U.S. Cl. 318—742 **28 Claims**



1. A hoist control system for moving a load from one-position to another, comprising:

an electro-mechanical brake means having a lock-position for maintaining the load in a fixed position and a release-position to enable movement of the load;

a motor means including a rotor for driving the load;

a power switching network having an input end and an output end, said output end being coupled to the motor means, said power switching network having an on-condition and an off-condition, electrical power being transferred to the motor means when the switching network is in the on-condition;

a voltage switch means having an on-position for connecting an alternating current ("AC") voltage to said system and an off-position for dis-connecting the electrical voltage from the system, said brake means being in the lock-position when the voltage switch means is in the off-position, said voltage switch means being coupled to the input of said power switching network; and

a control means coupled to said network and said brake, for maintaining the brake in the lock-position when said voltage switch means is in the on-position and said power switching network is in the off-condition.

4,207,509

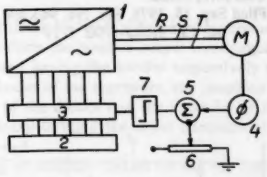
CONVERTER MOTOR

Harry Forssell, Kvarnängsvägen 20, S-180 10 Enebyberg, Sweden

Continuation of Ser. No. 351,450, Apr. 16, 1973, abandoned. This application Oct. 10, 1974, Ser. No. 513,594

Int. Cl.[2] H02P *5/16*

U.S. Cl. 318—798 **5 Claims**



1. An adjustable AC motor assembly, comprising a polyphase AC motor (M) and a static converter (1) generating polyphase electric power for driving said motor; said static converter comprising a plurality of controlled rectifiers; a control pulse generator (2) for said controlled rectifiers; a step switch (3) between said control pulse generator and said controlled rectifiers for transmitting said control pulses to said rectifiers in a given commutation sequence; means (4) for sensing the magnetic main flux of said motor in different directions; said sensing means comprising signal means (8-12) for transforming the value of said flux into electric signals and selecting means (13) for selecting at any moment the signal indicating the highest flux value in the different directions within the motor; a discriminator (5,7) and threshold value means (6) setting a certain reference value connected to said discriminator; said discriminator including means to give an output signal of an on-off type when said flux value signal exceeds said reference value; said discriminator being connected to said step switch to activate the step switch in response to such output signal.

4,207,510

CONTROL METHOD AND MEANS FOR EFFICIENT OPERATION OF BRUSHLESS D-C MOTORS OVER A WIDE RANGE OF OPERATING CONDITIONS

James R. Woodbury, Los Altos, Calif., assignor to SRI International, Menlo Park, Calif.

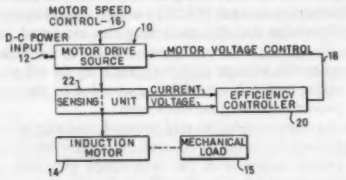
Filed Jan. 16, 1978, Ser. No. 869,953

Int. Cl.[3] H02P *5/40*

U.S. Cl. 318—802 **11 Claims**

1. In an induction motor control system for controlling an induction motor having a stator and a rotor, a variable fre-

quency and amplitude motor drive source for supplying the motor with a controllable frequency and amplitude motor drive voltage, means for controlling the amplitude of the motor drive voltage for efficient motor operation over a wide range of rotor speeds and motor loads, said controlling means comprising,



electronic means responsive to the motor input current and voltage for producing an error signal related to the difference between motor impedance and motor impedance required for optimum motor operating efficiency, and

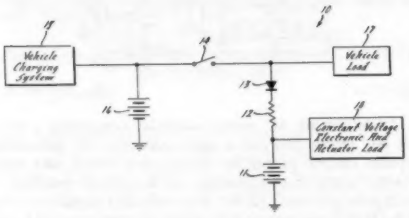
means responsive to said error signal for controlling the motor input voltage to minimize said difference.

4,207,511

CIRCUIT FOR CONSTANT VOLTAGE POWER SOURCE

Gerald W. Radtke, Milford, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 15, 1978, Ser. No. 943,254
Int. Cl.[2] H02J 7/00, 7/14
U.S. Cl. 320—6 **6 Claims**



1. A circuit for a constant voltage power source for operating a vehicle electrical load including:

a series connection including a vehicle charging means, a vehicle ignition switch, a diode, a resistive means for developing thereacross a portion of the voltage drop from said vehicle charging means, and a secondary battery having polarities such that current can flow from said vehicle charging system through said diode to charge said secondary battery;

a main battery connected in parallel across said vehicle charging means so that current can flow from said vehicle charging means and charge said main battery;

a secondary vehicle load requiring a substantially constant applied voltage connected in parallel across said secondary battery;

a main vehicle load connected in parallel across the series combination of said ignition switch and said main vehicle battery;

said secondary battery and said main battery having a common ground and said resistive means and said diode being connected in series between said ignition switch and said secondary battery so that said resistive means does not draw current from said main battery and said vehicle charging means when said ignition switch is open and said secondary battery does not substantially discharge through said main vehicle load;

said main battery having a substantially higher voltage and amperage capacity than said secondary battery; and

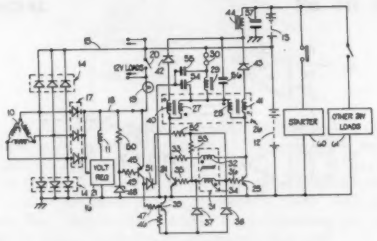
said resistive means having a current carrying capacity of about 10% of the ampere-hour rating of said secondary battery.

4,207,512

BATTERY CHARGING SYSTEMS FOR ROAD VEHICLES

Joseph D. F. Taylor, Kidderminister, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Mar. 21, 1978, Ser. No. 888,610
Claims priority, application United Kingdom, Apr. 2, 1977, 14015/77
Int. Cl.[2] H02J 7/14
U.S. Cl. 320—17 **4 Claims**



1. A battery charging system for a road vehicle comprising an alternator, a main rectifier connecting the alternator to a main battery, a d.c. to d.c. converter connecting the main battery to an auxiliary battery in series with the main battery, and semi-conductor switch means for inhibiting operation of the d.c. to d.c. converter sensitive to the output voltage of the alternator and arranged to inhibit operation of said converter when such output voltage is below a predetermined level, said converter including a pair of transistors having their emitters connected to one terminal of the main battery and their collectors connected through output transformers windings to the other terminal of the main battery, a feedback transformer having a primary winding connected between the collectors of said transistors and a secondary winding connected between the bases of said transistors to provide regenerative a.c. feedback to the transistors, and a pair of diodes through which opposite ends of the secondary winding are connected to said one terminal of the main battery, said semi-conductor switch means controlling the connection of said diodes to said one terminal of the main battery.

4,207,513

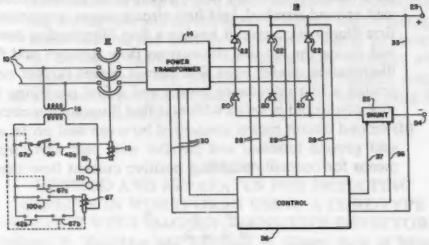
AUTOMATIC BATTERY CHARGER

John S. Hess, Jr., Pittsburgh, Pa., assignor to Power Control Corporation, Pittsburgh, Pa.

Filed Feb. 10, 1978, Ser. No. 876,600
Int. Cl.[2] H02J 7/04
U.S. Cl. 320—23 **3 Claims**

2. A battery charging system for charging storage batteries of any ampere-hour rating without adjustment, said system comprising a power source for applying a controllable charging voltage to a battery to be charged, first means responsive to battery charging current for initially controlling said charging voltage to maintain a predetermined maximum charging current until the battery cell voltage has reached a predetermined value, means responsive to the battery cell voltage for thereafter controlling said charging voltage to maintain the battery cell voltage at said predetermined value until the charging current falls to a predetermined minimum value which is independent of the ampere-hour rating of the battery, second means responsive to the charging current for controlling the charging voltage to maintain said minimum charging current,

and means for terminating the charging operation after the minimum charging current has been maintained for a predetermined time, said means for terminating including a digital counter, means for continuously supplying clock pulses to said counter, means controlled by said second means responsive to



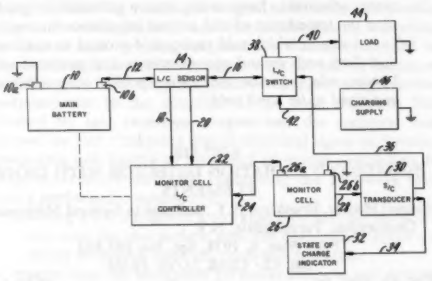
charging current for permitting the counter to run continuously as long as the battery current does not exceed said minimum current for more than a predetermined time, said counter providing an output signal after a predetermined period of continuous running, and means responsive to said output signal for effecting termination of the charging operation.

4,207,514

SYSTEM AND APPARATUS FOR MONITORING OR CONTROLLING SECONDARY BATTERY OPERATION

Martin G. Klein, Brookfield, Conn., assignor to Energy Research Corporation, Danbury, Conn.

Filed Nov. 21, 1977, Ser. No. 853,383
Int. Cl.² H02J 7/04
U.S. Cl. 320—44 **14 Claims**



1. In combination:

(a) a first rechargeable battery;

(b) sensor means for providing an output signal of first or second sense indicative of respective opposite senses of such first battery terminal current and indicative further of the magnitude of said first battery terminal current;

(c) a second rechargeable battery comprising a metal gas cell; and

(d) controller responsive to said sensor means for conducting terminal current through said second battery of magnitude proportional to such current magnitude indication of said sensor means output signal and for conforming the sense of such second battery terminal current

(1) to one sense during first sense indication in said sensor means output signal, and

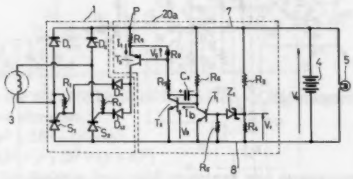
(2) to another sense opposite said one sense during second sense indication in said sensor means output signal.

4,207,515

BATTERY CHARGER

Hideki Yukawa, Susono, Japan, assignor to Kokusan Denki Co., Ltd., Numazu, Japan

Filed May 8, 1978, Ser. No. 905,780
Claims priority, application Japan, May 16, 1977, 52/56174; Aug. 19, 1977, 52/110101[U]
Int. Cl.² H02J 7/14
U.S. Cl. 320—59 **1 Claim**



1. A battery charger including a hybrid bridge rectifier circuit to rectify the output of an AC generator to charge a battery,

wherein said rectifier circuit comprises:

a plurality of thyristors having the anodes connected to each other to form the negative output terminal of the rectifier circuit,

a plurality of diodes having the cathodes connected to each other to form the positive output terminal of the rectifier circuit and having the anodes respectively connected to the cathodes of the thyristors, the junctions between the anodes of the diodes and the cathodes of the thyristors respectively forming the input terminals of the rectifier circuit, and

a plurality of auxiliary diodes having the cathodes respectively connected to the gates of said thyristors and having the anodes connected to each other to form a control terminal of the rectifier circuit, and

further comprising a control circuit including,

a voltage detecting circuit which detects the battery terminal voltage and produces an output signal when the battery terminal voltage exceeds a reference value,

a first transistor having a base connected to the output terminal of said voltage detecting circuit and a collector coupled to said rectifier circuit so as to be conductive when said battery terminal voltage exceeds the reference value,

a second transistor having an emitter connected to the negative terminal of said rectifier circuit and a base coupled to said first transistor so that base current of the second transistor is supplied from said rectifier circuit when said first transistor is nonconductive,

a third transistor having a base coupled to the collector of said second transistor, an emitter coupled to the positive output terminal of said rectifier circuit and a collector coupled to said control terminal of said rectifier,

said second transistor and third transistor being conductive when said first transistor is nonconductive,

resistor means connected across the base and emitter of said third transistor, and

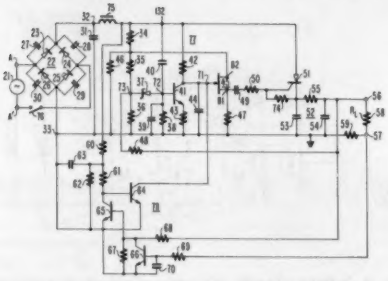
capacitor means connected across the base and collector of said second transistor, said capacitor means being charged when said first transistor is nonconductive and said second transistor is conductive,

the discharging current through said resistor means being in such a direction as to render the base of said third transistor positive relative to the emitter of said third transistor, thereby preventing conduction of said third transistor while said discharging current is flowing.

4,207,516
SWITCHING REGULATOR WITH REDUCED INRUSH CURRENT

William E. Babcock, Warren, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,568
Int. Cl.[2] G05F 1/56
U.S. Cl. 323—9 12 Claims



1. A regulator circuit with reduced inrush current, comprising:

a source of operating voltage, said operating voltage including an alternating current component;

switching means coupled to said source and an output terminal for providing an output voltage and responsive to a phase shifted switching signal which signal controls the conduction of said switching means;

a source of charging current;

a charging capacitor coupled to said source of charging current and said switching means for producing said phase shifted switching signal;

control means coupled to one of said charging capacitor and said source of charging current and responsive to bias signals coupled to a first terminal of said control means for varying the charging rate of said charging capacitor for varying said phase shifted switching signal;

a DC voltage divider coupled to said output voltage for direct current coupling to said first terminal a steady state bias voltage representative of said output voltage during a steady state interval for regulating said output voltage;

an AC voltage divider coupled to said operating voltage for capacitively coupling said operating voltage to said first terminal for providing an initial interval bias voltage of such value as to sufficiently phase shift said switching signal during said initial interval in a manner that will substantially reduce the inrush current during start-up; and

means for decoupling said DC voltage divider from said AC voltage divider during said initial interval for preventing the voltage at said output terminal during said initial interval from affecting said initial interval bias voltage, said AC voltage divider constrained to assume a DC component bias voltage level during said steady state interval that is provided by said steady state bias voltage.

4,207,517
SWITCHLESS D.C. MULTIFUNCTION TESTER

James M. Bloxam, 133 Skyline Dr., St. Paul, Minn. 55110

Continuation of Ser. No. 807,820, Jun. 20, 1977, abandoned.
This application Nov. 7, 1978, Ser. No. 958,377
Int. Cl.[2] G01R 31/02, 19/16, 15/12
U.S. Cl. 324—51 13 Claims

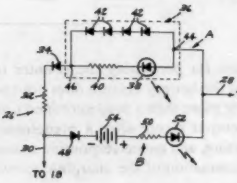
1. A self-contained switchless hand-held portable pocket probe for electrical trouble shooting of direct current systems, comprising:

(a) electrically conductive probe means for connection to a test point;

(b) ground terminal means for connection to a reference ground potential;

(c) first circuit means connected between said probe and said ground terminal for normally enabling positive current flow therethrough only in the direction from said probe to said ground terminal, said first circuit means comprising a first illumination circuit having a first illumination device and means for limiting the current flow through said first illumination device, said first circuit means further comprising a first impedance means and a first rectifying device connected in series with said first illumination circuit;

(d) second circuit means connected between said probe and said ground terminal and parallel with said first circuit means for normally enabling positive current flow there-



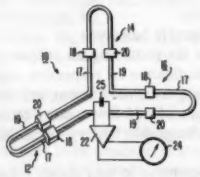
through only in the direction from said ground terminal to said probe said second circuit means comprising a second illumination device, a second rectifying device, a second impedance means, and a battery connected to provide positive current flow in a direction toward said probe, said first and second circuit means defining a loop circuit, said first and second illumination devices, said first and second illumination devices, said first and second rectifying devices, and said first and second impedance means selected to provide a quiescent leakage current of not greater than 4 microamps in said loop circuit, and said first impedance means selected to have an impedance substantially greater than the impedance of said second impedance means; and

(e) a housing in which said probe, said ground terminal and said first and second circuit means are mounted, said housing adapted to be inserted in a pocket when not in use and sized to be hand-held.

4,207,518
BROADBAND RADIATION DETECTOR WITH DIODE ELEMENTS

Samuel Hopfer, Brooklyn, N.Y., assignor to General Microwave Corporation, Farmingdale, N.Y.

Filed Mar. 6, 1978, Ser. No. 883,632
Int. Cl.[2] G01R 21/10, 19/22
U.S. Cl. 324—95 28 Claims



1. A radiation detector for free space microwave radiation having frequencies within a certain range comprising:

a plurality of resistive strips oriented along different axes and each having a resistance that is substantially uniform over said radiation frequency range and larger than the characteristic impedance of free space and having r-f currents induced therein in accordance with particular levels of

said free space radiation intensity, said r-f currents for corresponding radiation intensity levels being substantially constant with frequency,

a separate circuit including a barrier layer device having a substantial reactance and connected in series with each of said resistive strips for converting r-f currents induced in the associated strip by free space radiation to corresponding d-c signals, and means for establishing the r-f voltages across said barrier layer device corresponding to particular levels of radiation to be substantially constant with respect to frequency over said radiation frequency range,

and means responsive to said d-c signals for monitoring the free space radiation.

4,207,519

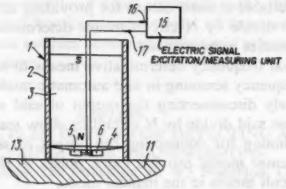
METHOD AND APPARATUS FOR DETECTING DEFECTS IN WORKPIECES USING A CORE-TYPE MAGNET WITH MAGNETO-SENSITIVE DETECTORS

Nikolai N. Zatsepin, and Alexandr P. Gusev, both of Minsk, U.S.S.R., assignors to Otdel Fiziki Nerazrusha-Juschego Kontrolya Akademii Nauk Belorusskoi S.S.R., U.S.S.R.

Filed May 25, 1978, Ser. No. 909,574

Int. Cl.[2] G01R *33/00*; H01L *43/00*

U.S. Cl. 324—235 **2 Claims**



1. A method for detecting defects in workpieces utilizing a detector including a core-type magnet substantially perpendicular to the workpiece and has been added, having a working surface, at least two magneto-sensitive elements mounted on the working surface of the magnet with the axis of maximum sensitivity of each magneto-sensitive element being oriented perpendicular to the direction of the total magnetic field formed by said core-type magnet and the magnetic field formed by said workpiece and an electrical signal excitation/-measuring unit having an input and an output coupled to the magneto-sensitive elements, comprising the following steps being performed concurrently:

scanning a test surface of a workpiece by moving the detector over the test surface with the magneto-sensitive elements in spaced, opposed relationship thereto;

magnetizing the workpiece perpendicularly to said test surface in a test zone under the action of the magnetic field of the core-type magnet;

exciting the magneto-sensitive elements by actuation of the excitation/measuring unit; and

measuring the gradient of the tangential component of the magnetic field comprised by the magnetic field of the core-type magnet and the magnetic field of the magnetized workpiece in the test zone.

2. An apparatus for detecting defects in workpieces comprising:

a detector mounted within a housing and adapted to be passed over a workpiece surface which is to be tested for defects;

a core-type magnet of said detector fixed within said housing, one surface of which comprises a working surface, said core-type magnet being magnetized perpendicularly to said working surface;

at least two magneto-sensitive elements of said detector mounted on said working surface of said core-type magnet;

each of said magneto-sensitive elements having a maximum sensitivity axis and a center;

said maximum sensitivity axis of each said magneto-sensitive element being oriented perpendicularly to the direction of the total magnetic field comprised of the magnetic field formed by said core-type magnet and the magnetic field formed by said workpiece;

the distance between said centers of said magnetosensitive elements being:

$$A = 2\sqrt{\frac{-B+\sqrt{B^2+12C}}{6}}$$

where

A is the distance between the centers of said magnetosensitive elements;

$B=y^2-2B^2+(y+h)^2$;

$C=(b^2+y^2)\,[b^2+(y+h)^2]$

y is the distance from said centers of said magnetosensitive elements to said test surface of said workpiece;

b and h are the half-width and the depth, respectively, of said defects to be detected; and

an electrical signal excitation/measuring unit having an input and an output coupled to said magneto-sensitive elements.

4,207,520

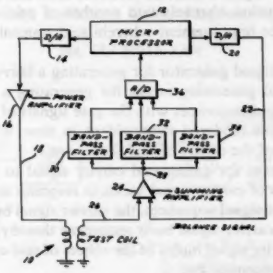
MULTIPLE FREQUENCY DIGITAL EDDY CURRENT INSPECTION SYSTEM

John H. Flora, Lynchburg, Va., and Henry T. Gruber, Columbus, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 6, 1978, Ser. No. 893,869

Int. Cl.[2] G01R *33/00*

U.S. Cl. 324—238 **8 Claims**



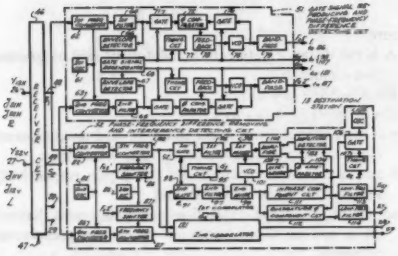
1. A multiple frequency digital eddy current inspection system for use in non destructive testing comprising: an eddy current test coil; a computer having a plurality of digital signal generating arrays for sequentially generating said multiple frequencies; means for changing digital signals to analog signals connected between the computer and the test coil; amplifier means for receiving eddy current signals from the test coil filter means connected to the amplifier means for selecting a desired signal; means having an input connected to the filter means for changing the filtered signal from an analog signal to a digital signal and an output connected to the computer for providing results of the eddy current inspection.

4,207,521

SYSTEM USING CARRIER BURST SEQUENCES FOR DETECTING INTERFERENCE SIGNALS OCCURRING ACROSS CHANNELS OF A RADIO LINK INCLUDING A REPEATER

Masami Takada, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 6, 1977, Ser. No. 830,628
Int. Cl.[2] H04B 1/59
U.S. Cl. 455—20 14 Claims



1. In a system for producing in a receiver of a radio communication link a plurality of detector output signals representative of at least one interference signal, said communication link comprising a transmitting station and repeater means for transmitting transmission signals through a plurality of transmission channels, said transmitting station transmittng said transmission signals in a first frequency band, said repeater means subjecting said transmission signals to frequency conversion from said first frequency band to a second frequency band, said receiver receiving said transmission signals in said second frequency band as a result of said frequency conversion, said interference signal being inevitably introduced from one of said transmission channels into another of said transmission channels, the improvement wherein said transmitting station comprises:

a carrier signal generator for generating a carrier signal;

gate signal generating means for generating a plurality of gate signal sequences with the gate signals of each of said sequences rendered incoincident in time with the gate signals of the others of said sequences;

gating means for gating said carrier signal to produce sequences of carrier signal bursts in response to the respective gate signal sequences, the carrier signal bursts of each of said carrier signal burst sequences thereby intervening the carrier signal bursts of the others of said carrier signal burst sequences; and

means for transmitting the carrier signal burst sequences at a first frequency in said first frequency band as at least portions of the respective transmission signals;

said receiver comprising:

gate signal reproducing means responsive to the carrier signal burst sequences received, together with the interference signal, at a second frequency in said second frequency band as at least portions of the respective transmission signals for reproducing said gate signal sequences; and

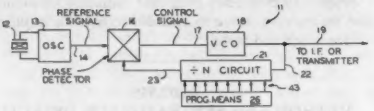
detecting means responsive to the reproduced gate signal sequences and the received interference signal for producing said detector output signals.

4,207,522

PROGRAMMABLE FREQUENCY SCANNING RADIO SYSTEM

Douglas Thornton, 1117 S. Second Ave., Maywood, Ill. 60153, and Arthur E. Housholder, 700 Wellington, Elk Grove Village, Ill. 60007

Filed Apr. 25, 1977, Ser. No. 790,402
Int. Cl.[2] H04B 1/32
U.S. Cl. 455—77 11 Claims



9. An improved frequency scanning radio system including programming means for controlled frequency synthesizer circuitry to select the frequencies to be scanned,

said frequency synthesizer circuitry employing divide by N circuit means, said programming means comprising

frequency scan control means for selectively operating said frequency scanning radio system in an automatic scan mode or a manual scan mode,

pre-settable counter means for providing count numbers to the divide by N circuit means determinative of the frequencies to be scanned,

manual frequency determinative means to allow automatic frequency scanning in said automatic mode and for selectively disconnecting the output of said counting means from said divide by N circuit to allow manual frequency scanning for connecting the output of said pre-settable counter means provide clock pulses to the divide by N circuit means in the manual mode,

clock means provide clock pulses for controlling the rate of the count of said counter means,

said improvement characterized in that up-down means are provided for controlling the direction of counting by said counter means in the automatic mode or in the manual mode, and

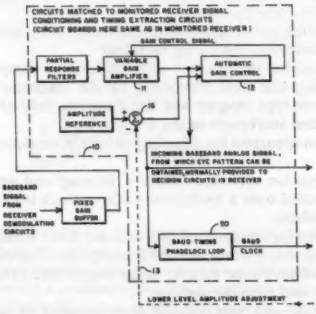
said up-down means also operates to control the clock rate in both said modes.

4,207,523

DIGITAL CHANNEL ON-LINE PSEUDO ERROR DISPERSION MONITOR

William F. Acker, Pinellas, Fla., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 1, 1977, Ser. No. 829,705
Int. Cl.[2] H03K 13/32
U.S. Cl. 375—17 57 Claims


CIRCUITS MATCHED TO MONITORED RECEIVER SIGNAL CONDITIONING AND TIMING EXTRACTION CIRCUITS (CIRCUIT BOARDS HERE SAME AS IN MONITORED RECEIVER)
GAIN CONTROL SIGNAL
PARTIAL RESPONSE FILTERS
VARIABLE GAIN AMPLIFIER
AUTOMATIC GAIN CONTROL
AMPLITUDE REFERENCE
INCOMING BASEBAND ANALOG SIGNAL, FROM WHICH EYE PATTERN CAN BE OBTAINED, NORMALLY PROVIDED TO DECISION CIRCUITS IN RECEIVER
BASEBAND SIGNAL FROM RECEIVER DEMODULATING CIRCUITS
FIXED GAIN BUFFER
BAUD TIMING PHASELOCK LOOP
BAUD CLOCK
LOWER LEVEL AMPLITUDE ADJUSTMENT

1. A monitor system for monitoring signal quality of an

incoming signal provided over time, and subject to random amplitude variations occurring therein, said monitor system comprising:

a first expected level determination means, adapted to receive said incoming signal and to recognize said incoming signal as a first sequence of data samples, said first expected level determination means being capable of having therein a first expected level signal where said first expected level signal has that amplitude value which substantially apportions, above and below this said first expected level signal amplitude value, first and second selected fractions, respectively, of those said first sequence data samples occurring within a selected first amplitude range of said first expected level signal amplitude value; and

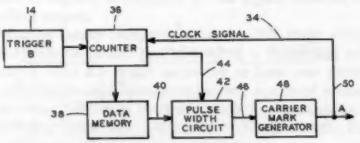
a first dispersion level determination means, connected to permit communication with said first expected level determination means, and adapted to receive those said first sequence data samples occurring within said selected first amplitude range, said first dispersion level determination means being capable of providing a first dispersion level signal at a first dispersion means output where said first dispersion level signal has that amplitude value which substantially apportions, above and below a combination of both said first expected level signal amplitude value and said first dispersion level signal amplitude value, third and fourth selected fractions, respectively, of those said first sequence data samples occurring within said selected first amplitude range.

4,207,524

RADIO COUPLED DEVICE FOR DETECTING AND ANALYZING WEAK TRANSMISSIONS

Francis J. Purchase, 130 Columbia St. W., Waterloo, Ontario, Canada

Filed Dec. 23, 1977, Ser. No. 863,851
Int. Cl.[2] H04B 1/12
U.S. Cl. 375—22 **7 Claims**



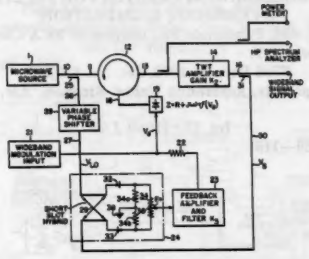
1. A method for continuous transmission and digital analysis of relatively weak signal transmissions to determine the pesence of encoded signals within crowded frequency bands and wherein the transmission consists of a duty cycle of primarily continuous "on" transmission, the steps of: transmitting a digital base signal containing pulse width coding, including defined mark points, amplifying said signal transmission within a receiver to greatly amplify the signal transmission together with a substantial background noise within the crowded frequency transmission band, and then processing the amplified signal by the steps of: simultaneously reconstructing the incoming signal data to provide pulse width, word length and bit pattern as parameters for determining the presence of an encoded word, simultaneously submitting reconstructed pulse width, word length and bit pattern data to a data comparator for comparison by a registered signal within the comparator and corresponding to the encoded signal to which the system should be responsive, authenticating the received encoded signal by counting the number of bits in a second encoded signal detected also as having the correct pulse, word length and bit pattern corresponding with that contained within the data memory, and imposing a further requirement that a repeated detection of encoded signal occur within a predetermined time period.

4,207,525

CARRIER CONTROL SYSTEM FOR SUPPRESSED CARRIER MODULATORS

Robert J. Martel, Baltimore, and Walter Ewanus, Ellicott City, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 600,823, Dec. 12, 1966, abandoned.
This application Feb. 14, 1977, Ser. No. 768,131
Int. Cl.[2] H04B 1/68
U.S. Cl. 455—109 **8 Claims**



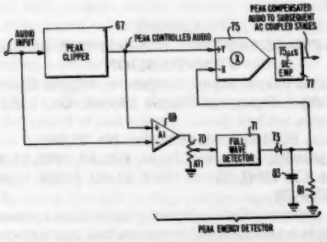
1. In a radio signaling system having a source of carrier frequency and a balanced modulator between said source and the system output, a carrier-nulling system for minimizing the carrier frequency component in the output of said system comprising: a phase detector coupled to said source of carrier frequency and to said system output for deriving from the carrier frequency from said source and from said system output an error signal in terms of a DC voltage for controlling said modulator to cause said modulator to drive the carrier frequency component in the output from said modulator toward a null.

4,207,526

PRE-PROCESSING APPARATUS FOR FM STEREO OVERSHOOT ELIMINATION

Richard F. Abt, Pittsburgh, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,820
Claims priority, application United Kingdom, Apr. 5, 1978, 13369/78
Int. Cl.[2] H04B 1/04
U.S. Cl. 455—110 **4 Claims**



1. An audio processor for modifying an audio modulating signal waveform to be applied to an FM transmitter, said transmitter of the type including a first pre-emphasis means and a low-pass filter in the input thereof which filter normally produces ringing of that signal when the audio is limited or clipped to prevent overmodulation, comprising:

second pre-emphasis means responsive to said audio modulating signal for pre-emphasizing said audio in a manner similar to said first pre-emphasis means,

limiting means coupled to said second pre-emphasis means

responsive to the audio output signal level therefrom reaching a level which would cause over 100% modulation for reducing that level by an amount determined by the amplitude of ringing of second audio output signal in said low-pass filter to produce a limited audio signal, and

de-emphasis means coupled to said limiting means for de-emphasizing said limited audio in a manner inverse to said pre-emphasis means to provide essentially an overall flat frequency response.

4,207,527

PRE-PROCESSING APPARATUS FOR FM STEREO OVERSHOOT ELIMINATION

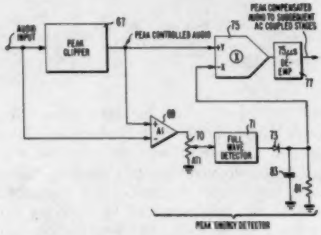
Richard F. Abt, Pittsburgh, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 18, 1978, Ser. No. 970,808

Claims priority, application United Kingdom, Apr. 5, 1978, 13368/78

Int. Cl.[2] H04B *1/04*

U.S. Cl. 455—110 **2 Claims**



1. In an audio processor of the type including clipping means for generally symmetrically clipping an audio modulating signal to be applied to an FM transmitter to prevent overmodulation thereof which signal after clipping has some asymmetry producing overmodulation due to a shifting of the entire signal in the capacity coupling circuit to follow, the improvement for providing a D.C. restoration effect on a predictive basis, comprising;

means responsive between said audio signals before and said transmitter, and further responsive to after said clipping means for detecting the amount of peak energy lost due to peak clipping,

gain control means coupled to the output of said clipping means and said detecting means for reducing the amplitude level of the clipped audio signal in proportion to said peak energy lost to prevent overmodulation.

4,207,528

TIMING-PHASE CONTROL SYSTEM FOR DUOBINARY TRANSMISSION

Akira Sawai, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan and Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 14, 1979, Ser. No. 12,090

Claims priority, application Japan, Feb. 15, 1978, 53/1697878

Int. Cl.[2] H04L *25/60*; H03K *11/00*; H04B *3/36*

U.S. Cl. 375—20 **2 Claims**

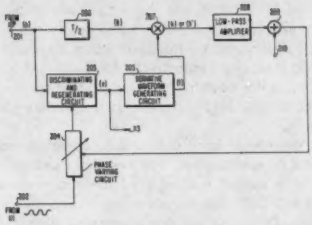
1. In a receiver of a duobinary transmission system of the type wherein a timing signal is transmitted superimposed on a transmission signal containing digital information, said receiver having an equalizing amplifier connected to equalize and amplify a received signal and means for extracting a timing signal from the received signal, the improvement comprising:

a discriminating and regenerating circuit connected to the output of said equalizing amplifier for recovering the transmitted digital signal by discriminating and regenerating in an appropriate timing phase the equalized duobinary waveform from said equalizing amplifier;

a phase varying circuit connected to vary the phase of said timing signal supplied to said discriminating and regenerating circuit;

a derivative waveform generating circuit responsive to the output of said discriminating and regenerating circuit for providing a differentiated output signal;

a multiplier connected to the output of said derivative waveform generating circuit for multiplying said differentiated



output signal and said equalized duobinary waveform by each other in a predetermined phase relationship to produce a product signal; and

a low-pass amplifier connected to said multiplier for amplifying said product signal and supplying the time average thereof at its output, said output being given a suitable D.C. offset and negatively fed back to a control input terminal of said phase varying circuit.

4,207,529

RADIO RECEIVER

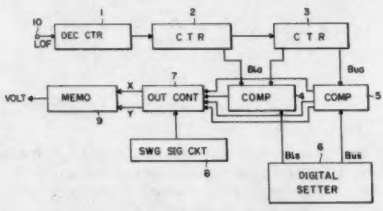
Yuji Amaya, and Tatsuo Ito, both of Kobe, Japan, assignors to Fujitsu Ten Limited, Japan

Filed Mar. 30, 1977, Ser. No. 783,060

Claims priority, application Japan, Apr. 8, 1976, 51/39648; Apr. 8, 1976, 51/39649; Apr. 9, 1976, 51/40024

Int. Cl.[2] H04B *1/26, 1/32*

U.S. Cl. 455—158 **22 Claims**



6. A receiver for performing tuning of a received signal frequency to a desired broadcast signal frequency, selected from a receiving frequency band having a lower limit and upper limit, by adjusting the frequency of a local oscillator output generated in said receiver, comprising:

frequency divider means, having stored therein a preset number corresponding to said received signal frequency which in turn corresponds to the lower limit of said receiving frequency band, for receiving and frequency dividing the local oscillator output to produce an output having a binary initial value corresponding to the lower limit of the receiving frequency band when said local oscillator output matches said preset number, and generating an output having increasing binary values respectively corresponding to increasing constant frequencies within said receiving frequency band,

digital setter means for setting said desired broadcast frequency and providing an output corresponding thereto,

digital comparator means for comparing the respective

outputs from the frequency divider means and the digital setter means fo produce a control signal, and

control means responsive to said control signal for selectively and gradually increasing or decreasing the frequency of the local oscillator output until the respective outputs from the frequency divider means and the digital setter means coincide,

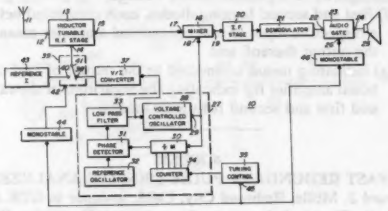
wherein said frequency divider means comprises a cascaded counter arrangement, said frequency divider means including means for determining selection of a frequency-modulated band of operation, and responsive thereto for adapting said cascaded counter arrangement to form a quaternary counter arrangement without feedback.

4,207,530

ELECTRICALLY TUNABLE INDUCTOR AND METHOD

Lawrence W. Gallagher, Palatine, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 12, 1977, Ser. No. 832,483
Int. Cl.[2] H04B 1/10, 1/14
U.S. Cl. 455—174 **12 Claims**



1. A receiver comprising:

antenna means for receiving signals;

tuning means coupled to said antenna means and operative during the operation of said receiver for selecting some of the received signals for further processing; and

speaker means coupled to said tuning means for producing audible signals in response to the signal selected by said tuning means;

said tuning means including a tunable RF stage coupled to said antenna means and providing a frequency selective output, said RF stage including at least one electrically controllable inductor means having a control terminal for receiving electrical control signals and producing corresponding inductance values in response thereto for controlling the selection of said RF stage;

said tuning means also including both a tunable frequency synthesizer, which produces a local oscillator tuning signal and a mixer stage which receives the local oscillator signal and receives the output of the RF stage and translates one frequency in the output of the RF stage to a predetermined IF frequency;

means for generating at a first terminal a plurality of desired electrical control signals to be applied to said controllable inductor means for producing a corresponding plurality of desired values of inductance, said plurality of desired electrical control signals being determined by said frequency synthesizer;

means for generating at a second terminal an electrical reference signal to be applied to said inductor means prior to the application of each of said desired control signals to said inductor means, said reference signal, when applied to said inductor means, causing a reference inductance value; and

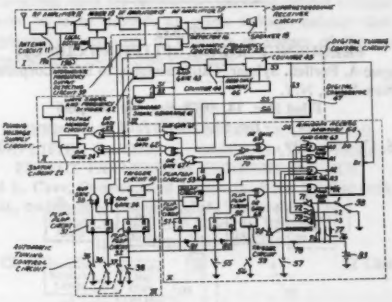
means for controlling said control signal generating means and said reference signal generating means by producing a trigger input signal whenever a change in the frequency of the local oscillator tuning signal is to be implemented, said trigger input signal resulting in automatically applying said reference signal to said inductor means control terminal and then applying any desired one of said control signals to said inductor means control terminal by coupling said control terminal initially to said second terminal and then to said first terminal, whereby accurately tuning said receiver by setting said inductor means to desired values of inductance is accomplished despite any hysteresis characteristic of said inductor means.

4,207,531

TUNING CONTROL SYSTEM OF RADIO RECEIVER

Tatsuo Ito, Kobe, Japan, assignor to Fujitsu Ten Limited, Kobe, Japan

Filed Dec. 14, 1977, Ser. No. 860,379
Claims priority, application Japan, Dec. 24, 1976, 51-157087
Int. Cl.[2] H04B 1/34
U.S. Cl. 455—164 **1 Claim**



1. A tuning control system of a radio receiver, said radio receiver including a detector, said tuning control system comprising

a tuning circuit having a variable reactance element; a tuning voltage supply circuit connected to the tuning circuit for applying a variable control voltage to the variable reactance element and for sweeping the receiving frequencies of the receiver;

a counter circuit coupled to the tuning circuit for counting the receiving frequency signals, said counter circuit having an output terminal and providing at said output terminal an output corresponding to the count;

a digital settir ; circuit connected to the counter circuit for designating a desired broadcast frequency, said digital setting circuit comprising a random access memory for receiving the counted output of said counter circuit corresponding to the receiving frequency when the receiver is tuned, said random access memory writing and storing said input signal in itself and providing the stored signal as an output designation signal, said random access memory including a write/read signal input terminal;

a digital comparator circuit having inputs connected to the counter circuit and the digital setting circuit for comparing the output of said counter circuit and the output designation signal of said digital setting circuit, said digital comparator circuit having outputs coupled to the tuning voltage supply circuit and providing at said outputs a sweep signal for said tuning voltage supply circuit;

a write command signal generating circuit having a trigger generating circuit for detecting the broadcast signal when it is received and generating a write command signal and an output terminal coupled to the random access memory for generating a write command signal for starting writing operation of said random access memory, said random access memory consisting of a semiconductor memory device having a write/read signal input terminal coupled to the output terminal of said write command signal generating circuit, a write data signal input terminal connected to the output terminal of the counter circuit, a read data signal output terminal connected to the digital setting

input terminal of the digital comparator circuit and a plurality of address signal input terminals;

an address designation circuit having output terminals coupled to the address signal input terminals of said random access memory;

an automatic frequency control circuit connected to the tuning voltage supply circuit for detecting a DC voltage in accordance with a degree of detuning of the tuning frequency of the detector and providing an output controlling the application of the sweep signal of the tuning voltage supply circuit; and

a gate circuit having an output connected to the write/read signal input terminal of said random access memory, an input related to the output of said automatic frequency control circuit and another input coupled to the output terminal of the write command signal generating circuit.

4,207,532

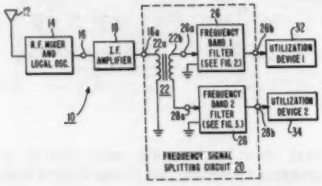
FREQUENCY SIGNAL SPLITTING CIRCUIT

Wayne A. Perlich, Sylmar, Calif., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 14, 1978, Ser. No. 969,396

Int. Cl.[2] H04B *1/06*

U.S. Cl. 455—339 **4 Claims**


R.F. MIXER AND LOCAL OSC.
I.F. AMPLIFIER
FREQUENCY BAND 1 FILTER (SEE FIG. 2)
FREQUENCY BAND 2 FILTER (SEE FIG. 3.)
UTILIZATION DEVICE 1
UTILIZATION DEVICE 2
FREQUENCY SIGNAL SPLITTING CIRCUIT 20

1. A frequency signal splitting circuit comprising in combination:

a transformer having a primary winding adapted to receive signals in a relatively wide band of frequencies and having a two terminal secondary winding;

a first filter coupled to one terminal of said secondary winding to receive said signals in said wide band of frequencies therefrom, said first filter having an output terminal arranged to pass thereto signals in a first relatively narrow band of frequencies within said wide band of frequencies; and

a second filter coupled to the other terminal of said secondary winding to receive said signals in said wide band of frequencies therefrom, said secondary filter having an output terminal and arranged to pass thereto signals in a second relatively narrow band of frequencies within said wide band of frequencies, said first and second relatively narrow bands of frequencies differing from one another, said second filter exhibiting a low impedance, with respect to a circuit reference potential terminal, to said first band of frequencies and exhibiting a relatively high impedance with respect to said circuit reference potential terminal to said second band of said frequencies; said first filter exhibiting a relatively low impedance with respect to said circuit reference potential terminal to said second band of frequencies and exhibiting a relatively high impedance with respect to said circuit reference potential terminal to said first band of frequencies.

4,207,533

ELECTRONIC PHOTOMETER

John I. Smith, 4505 Ellicott St., NW., Washington, D.C. 20016

Filed Apr. 12, 1978, Ser. No. 895,751

Int. Cl.[2] G01J *1/42*; G06G *7/24*

U.S. Cl. 328—145 **11 Claims**

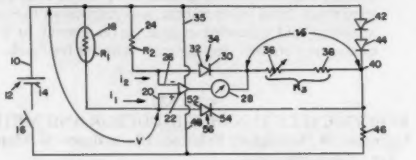
1. A circuit providing an output voltage proportional to the logarithm of the ratio of two resistors and substantially independent of the supply voltage therefor comprising:

(a) a power source;

(b) first resistance means connected to said power source;

(c) second resistance means connected to said power source;

(d) operational amplifier means having first and second inputs and an output, said first input connected to said first resistance means and said second input connected to said resistance means;



(e) means connected to the output of said operational amplifier means for referencing an input of said operational amplifier to a predetermined voltage;

(f) first and second logging diodes, each connected between a respective input of said operational amplifier means and the output thereof; and

(g) indicating means connected to the output of said operational amplifier for indicating the logarithm of the ratio of said first and second resistance means.

4,207,534

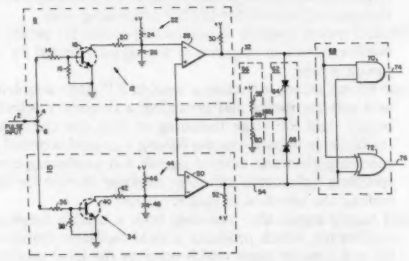
FAST REDUNDANT PULSE DENSITY ANALYZER

Gerard J. Miille, Redwood City, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 10, 1978, Ser. No. 885,157

Int. Cl.[2] H03K *5/20, 19/32, 13/32*

U.S. Cl. 328—147 **8 Claims**



1. A pulse density analyzer including a self-checking circuit comprising:

a threshold reference potential having an input terminal and an output terminal;

a first threshold detector having a first input terminal arranged to accept the pulses to be analyzed, having a second input terminal connected to the output terminal of said threshold reference potential, said first detector providing at an output terminal a binary output signal of one state when the pulse density at said input terminal reaches a predetermined threshold value;

a second threshold detector having a first input terminal arranged to accept the pulses to be analyzed, having a second input terminal connected to the output terminal of said threshold reference potential, said second detector providing at an output terminal a binary output signal of said one state when the pulse density at said input terminal reaches said predetermined threshold value;

a threshold equalizer having a first input terminal connected to the output terminal of said first threshold detector, having a second input terminal connected to the output

terminal of said second threshold detector, and having an output terminal connected to the input terminal of said threshold reference potential, said threshold equalizer being responsive to the output signal of one of the two threshold detectors, whichever occurs first, for effecting a simultaneous change in the threshold reference potential applied to both threshold detection circuits; and

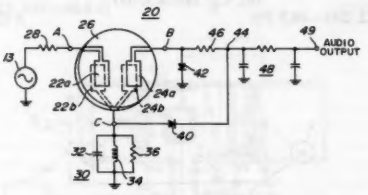
means responsive to the output signals from said first and second threshold detectors for providing a first output indication at a first output terminal when said binary output signals are both of said one state and a second output indication at a second output terminal when said binary output signals are not of said one state.

4,207,535

TWO-POLE, FIXED-TUNED MONOLITHIC CRYSTAL FREQUENCY DISCRIMINATOR

Aristotelis S. Arvanitis, Addison, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 20, 1978, Ser. No. 888,123
Int. Cl.² H03D 3/16
U.S. Cl. 329—118 **6 Claims**



1. A two-pole, monolithic crystal frequency discriminator for deriving an audio output from a received radio frequency signal, comprising in combination:

a monolithic wafer body of piezoelectric material;

first and second pairs of electrodes on said wafer to form resonator means and being of a mass for responding to a modulated input signal of a given reference frequency;

a first input port formed by one electrode of said first electrode pair and adapted to receive said given frequency input signal;

a second port formed by one electrode of said second electrode pair and serving as a first output;

a third port formed by said other electrodes of said first and second electrode pairs interconnected and serving as a second output;

a tuned circuit connected to said third port;

an audio output terminal; and

a first rectification device coupled between said second port and said audio output terminal and a second rectification device coupled between said third port and said audio output terminal.

4,207,536

DUAL-ADJUSTMENT BALANCE CIRCUIT FOR OPERATIONAL AMPLIFIERS

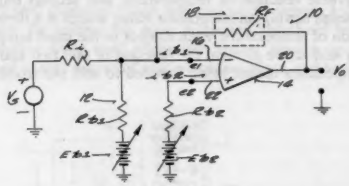
Paul H. Lewis, Houghton, Mich., assignor to Michigan Technological University, Houghton, Mich.

Filed Mar. 2, 1978, Ser. No. 882,781
Int. Cl.² H03F 3/45
U.S. Cl. 330—69 **16 Claims**

1. A dual-adjustment balance circuit for an operational amplifier having an inverting input and a non-inverting input, the amplifier having an input resistor connected to the inverting input, and a feedback resistor connected to and between the inverting input and the amplifier output, said balance circuit comprising:

means for applying a first adjustable voltage to the inverting input for setting the inverting input voltage to zero, and

means for applying a second adjustable voltage to the non-



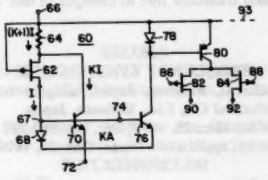
inverting input for setting the amplifier output voltage to zero so as to provide an offset voltage balance that is generally insensitive to changes in values of the input resistor and the feedback resistor.

4,207,537

DIFFERENTIAL FIELD EFFECT TRANSISTOR AMPLIFIER HAVING A COMPENSATING FIELD EFFECT TRANSISTOR CURRENT SOURCE

David L. Cave, Phoenix, and Wilson D. Pace, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 17, 1978, Ser. No. 925,083
Int. Cl.² H03F 3/16, 3/45
U.S. Cl. 330—253 **11 Claims**



8. An amplifier circuit including in combination:

current supply field effect transistor means having source, drain and gate electrodes;

negative feedback means coupled to said source electrode;

bipolar diode means having one electrode connected to said drain electrode and another electrode connected to a supply terminal;

bipolar transistor means having a control electrode and main electrodes, said control electrode being coupled to said drain electrode and to said one electrode of said bipolar diode means at a circuit node, said main electrodes being connected between said source electrode and said supply terminal, said circuit node providing an output current;

circuit means coupled to said circuit node; and

differentially connected field effect devices having commonly-connected source electrodes coupled to said circuit means.

4,207,538

TEMPERATURE COMPENSATION CIRCUIT

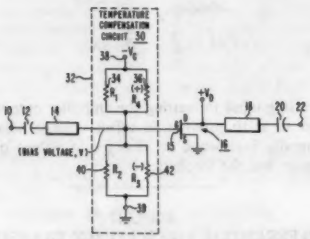
Jitendra Goel, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 29, 1978, Ser. No. 938,267
Int. Cl.² H03F 1/30, 3/16
U.S. Cl. 330—277 **12 Claims**

1. In an amplifier circuit which includes a field effect transistor having a gate electrode, wherein the gain of said transistor is a function of the temperature thereof and also a function of

the amplitude of bias signal applied to said electrode, the improvement comprising in combination;

a potential divider network comprising the series connection of a first impedance means of the type which does not have a junction having an impedance value which is an inverse function of temperature, and second impedance means having an impedance value which is a direct function of temperature, each subject to the same temperature as said active element the junction of said first and second impedance means being coupled to said electrode; and



means for connecting a source of bias potential to said potential divider network, said first and second impedance means being arranged to provide, at said junction, a signal which is a temperature dependant fraction of said bias potential, the value of said signal being matched to the gain of said field effect transistor as a function of temperature, said signal being applied to said electrode to alter the gain of said transistor in a sense to oppose the change in gain of said transistor due to changes in said temperature.

4,207,539

FREQUENCY SYNTHESIZER

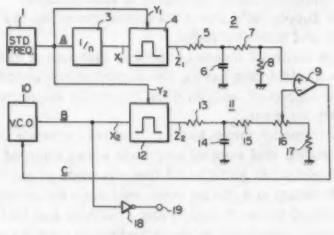
Hiroshi Minakuchi, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Dec. 28, 1977, Ser. No. 865,120

Claims priority, application Japan, Dec. 29, 1976, 51/159609

Int. Cl.[2] H03B *3/04*

U.S. Cl. 331—1 A **10 Claims**



1. A variable frequency synthesizer comprising:

a frequency divider connected to a source of reference frequency signal;

a first monostable device having a first input terminal connected to the output of said frequency divider and a second input terminal connected to said reference frequency source for generating a first pulse in response to each oscillation of the output signal from said frequency divider with a duration which is a function of the period of said reference frequency signal;

a variable frequency oscillator;

a second monostable device having a first input terminal connected to the output of said variable frequency oscillator and a second input terminal connected to said reference frequency source for generating a second pulse in response to each oscillation of the output signal from said variable frequency oscillator with a duration which is a function of the period of said reference frequency signal;

a differential integrator connected to be responsive to said first and second pulses for generating a voltage signal representative of the difference in duty cycle between said first and second pulses for application to the input of said variable frequency oscillator; and

a variable resistance element connected to said differential integrator, having a manually adjustable, continuously variable resistance for varying said voltage signal, whereby the output signal of said variable frequency oscillator is continuously variable in frequency as a function of the resistance of said variable resistance element.

4,207,540

GAS LASER SYSTEM

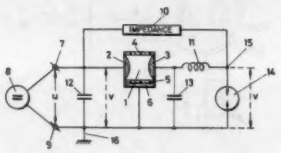
Gerardus J. Ernst, Wilgenkamp, Netherlands, assignor to Stichting voor Fundamenteel Onderzoek der Materie, Utrecht, Netherlands

Filed Feb. 9, 1978, Ser. No. 876,498

Claims priority, application Netherlands, Feb. 10, 1977, 7701389

Int. Cl.[2] H01S *3/097*

U.S. Cl. 331—94.5 PE **6 Claims**



1. A gas laser system comprising a laser tube with two rectangular substantially flat electrodes positioned opposite one another and parallel to the axis of the tube for producing a substantially uniform field, a direct current source with a buffer capacitor connected in parallel therewith, one terminal of said current source being connected to the first of said electrodes, and means for inducing the ionization of the gas preceding the discharge in the gas mixture, said means comprising at least one metal plate connected to the other terminal of the source of current and being insulated at the side of the discharge and being positioned in parallel to the axis between parallel running edges of the electrodes, a series connection of an impedance and an inductor mutually connecting the electrodes, said inductor connectd to said second electrode, a switch which may temporarily connect the junction of the impedance and the inductor to the metal plate, and a capacitor connected between the second electrode and the metal plate.

4,207,541

COOLING JACKET FOR LASER FLASH LAMPS

Arieh M. Karger, Binghampton, N.Y., and Elmer G. Fridrich, Chardon, Ohio, assignors to General Electric Company, Utica, N.Y.

Filed Feb. 21, 1978, Ser. No. 879,516

Int. Cl.[2] H01S *3/092*

U.S. Cl. 331—94.5 P **13 Claims**

1. Apparatus for cooling of a flash lamp in an optically pumped laser; comprising:

a. an elongated hollow cylindrical coolant jacket having a sealable opening proximate one end thereof;

b. an electrically nonconductive hollow trigger wire assembly having an elongated electrically conductive element therein, said assembly being axially positioned along an inner surface of said coolant jacket and having one end routed through said sealable opening;

c. a pair of end wall members disposed at the ends of said coolant jacket for forming a closed coolant chamber therefrom;

d. inlet/outlet means coupled to said coolant jacket for enabling a flow of coolant fluid to pass through said coolant chamber; and

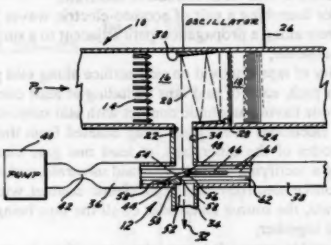
e. means coupled to said coolant jacket for retaining said flash lamp within said coolant jacket.

4,207,542

MULTIPLE SHOCK AERODYNAMIC WINDOW

Peter I. Shen, Torrance, Calif., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 20, 1978, Ser. No. 898,049
Int. Cl.[2] H01S *3/00*
U.S. Cl. 331—94.5 G **12 Claims**



1. In a laser system having a housing, laser cavity, an aperture located within said housing adjacent said cavity, a passageway extending from and surrounding said aperture and an aerodynamic window optically aligned with said aperture in said housing, the improvement therein residing in said aerodynamic window, said aerodynamic window comprising means having its longitudinal axis extending transversely across said passageway for allowing a supersonic flow of gas to pass therethrough, means for providing gas to said supersonic flow passing means, said supersonic flow passing means being divided into an entrance duct and a capture duct, a wedge-shaped element located in said entrance duct and a diffuser vane located in said capture duct, at least two shock waves being generated at said wedge-shaped element and crossing said passageway, said diffuser vane intersecting at least one of said pair of shock waves, whereby said aerodynamic window substantially reduces flow separation in said capture duct.

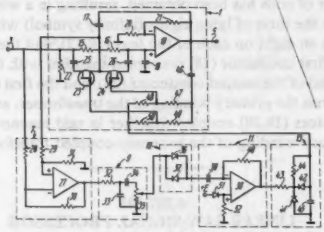
4,207,543

ADAPTIVE FILTER NETWORK

Ilya S. Izakson, ulitsa Vetrova, 21, kv. 4, and Arnold B. Nikolaenko, ulitsa Scherbakova, 82a, kv. 28, both of Kiev, U.S.S.R.

Filed Jul. 18, 1978, Ser. No. 925,683
Int. Cl.[2] H03H *7/10*
U.S. Cl. 333—17 R **8 Claims**

1. An adaptive filter network comprising a controllable filter having an adjustable cut-off frequency and adapted for varying the pass band of said adaptive filter network, said controllable filter having an input and an output connected respectively to the input and output of said adaptive filter network, and a control input; an algebraic adder for generating control signals, having one input connected to said input of said controllable filter and the other input connected to said output of said controllable filter, and having an output; a weighting filter for converting the control signal spectrum in response to the variation of the load sensitivity with frequency by varying the transmission coefficient of the control signal spectrum components, said weighting filter having its input connected to said output of said algebraic adder, and having an output; a threshold limiter for setting the noise reduction threshold level of said adaptive filter, said threshold limiter having an input connected to said output of said weighting filter, and having an



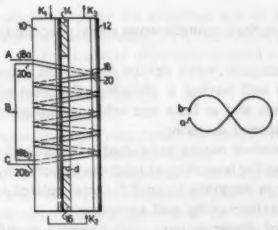
output; a control signal frequency corrector for varying the control signal level at said control input of said controllable filter depending on its frequency, having an input connected to said output of said threshold limiter, and having an output; an amplitude detector for shaping control signals applied to said control input of said controllable filter, having an input connected to said output of said frequency corrector and having an output connected to said control input of said controllable filter.

4,207,544

HIGH-FREQUENCY TRANSFORMER

Bernt Klostermark, Smedsbacksgatan 3B, 11539 Stockholm, Sweden

Filed Mar. 7, 1978, Ser. No. 884,172
Claims priority, application Sweden, Mar. 25, 1977, 7703466
Int. Cl.[2] H03N *5/00*
U.S. Cl. 333—24 R **12 Claims**



1. A high-frequency transformer for a wide range of frequencies and of the kind comprising a winding means attached on a core means, the winding means consisting of two parallel conductors isolated from each other, of which conductors one constitutes a primary winding, and the winding formed of the two conductors connected in series constitutes a secondary winding in a transformer coupled by economy coupling with a transforming ratio of 1:2, characterized in that the two substantially parallel conductors (**18,20**) are wound on a core means of soft-magnetic material with low magnetic and dielectric losses in the alternating field and consisting of two substantially parallel oblong legs (**10,12**) disposed separated from each other and at both ends magnetically connected by yokes (**14,16**) to a substantially closed magnetic path, in such a manner, that starting from the adjacent leading points (**18*a*,20*a***) of the two

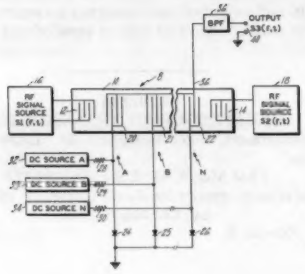
conductors (18,20) the conductors are wound about a first leg (10) in a first winding direction to the intermediate space between said first leg (10) and said second leg (12), and thereafter the winding continues with one coil about said second leg (12) in a second opposed winding direction back to said intermediate space between the legs, and the winding continues with one coil about the first leg (10) in said first winding direction again to said intermediate space between the legs and passes over to a coil wound about said second leg (12) in said second winding direction, and so forth in the same manner, until the desired number of coils has been obtained, resulting in a winding with coils in the form of lying eights (infinity symbol) with one coil in such an eight on each of the legs (10,12), and the end (18*b*) of the first conductor (18) is coupled together with the leading end (20*a*) of the second conductor (20), and the first conductor (18) forms the primary winding of the transformer, and the two conductors (18,20) coupled together in said manner form the secondary winding of the economy-coupled transformer.

4,207,545

LINEAR SAW SIGNAL PROCESSOR

Thomas W. Grudkowski; Gary K. Montress, both of Glastonbury, Conn., and Thomas M. Reeder, Portland, Oreg., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 25, 1978, Ser. No. 936,984
Int. Cl.[2] H03H *9/26, 9/32, 9/30*
U.S. Cl. 333—150 **10 Claims**



1. A linear surface acoustic wave signal processing apparatus comprising:

a surface acoustic wave device formed on a piezoelectric substrate and having a plurality of acoustoelectric tap transducers and at least one other acoustoelectric transducer disposed thereon;

RF signal source means associated with at least said other transducer for launching at least one acoustic wave in said substrate in response to an RF signal related to the processing performed by said apparatus;

a plurality of circuit devices, each having a rectifying junction interconnected with a corresponding one of said tap transducers to form related output taps;

a plurality of DC bias means, each corresponding to a related one of said devices, each providing DC bias current in the rectifying junction of the corresponding one of said devices of a magnitude, related to a parameter involved in the signal processing performed by said apparatus, so as to provide RF output voltage from the related device as a linear function of the DC bias current; and

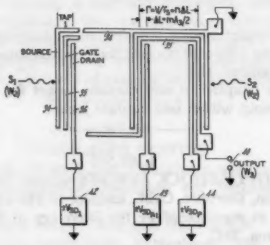
means for combining RF currents from said devices to provide a combined RF output signal having a plurality of components each corresponding to one of said tap transducers and linearly related in amplitude to the DC bias current provided by the corresponding one of said DC bias means.

4,207,546

PHASE AND AMPLITUDE PROGRAMMABLE INTERNAL MIXING SAW SIGNAL PROCESSOR

Thomas W. Grudkowski, Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 7, 1978, Ser. No. 967,323
Int. Cl.[2] H03H *7/8, 9/26, 9/30*; **H01L** *27/20*
U.S. Cl. 333—152 **3 Claims**



1. A surface acoustic wave signal processor employing programmable internal product mixer efficiency, comprising:

a piezoelectric and semiconductive substrate;

means for launching a pair of acousto-electric waves in said substrate along a propagation path adjacent to a surface of said substrate;

a plurality of taps disposed on said surface along said propagation path, each of said taps including at least one drain electrode having an ohmic contact with said substrate, the drain electrodes of each tap being isolated from the drain electrodes of the other taps, at least one gate electrode having a rectifying contact with said substrate, and at least one source electrode having an ohmic contact with said substrate, the source electrodes of all the taps being connected together;

programmable means for separately providing to each of said taps a source-drain bias between the drain of the corresponding one of said taps and said common source, said programmable means providing bias to each tap of amplitude and polarity to respectively control the amplitude and phase of the mixer efficiency of nonlinear product mixing of said waves in the region of said substrate contiguous with such tap; and

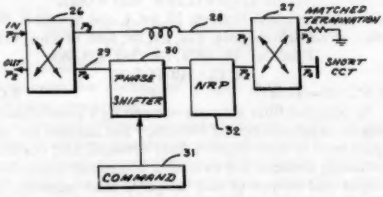
means associated with said gate electrodes for extracting from each of said taps a component of product mixing occurring at such tap.

4,207,547

REFLECTION MODE NOTCH FILTER

Daniel C. Buck, Hanover, Md., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 1, 1978, Ser. No. 956,705
Int. Cl.[2] H01P *1/20*; **H03H** *7/14*
U.S. Cl. 333—209 **6 Claims**



1. A reflection mode notch filter comprising first and second four terminal electromagnetic wave power dividers, first and

second delay lines and a nonreciprocal phase element, the first and the second adjacent mutually isolated terminals of said first power divider comprising an input and an output respectively, the third and fourth adjacent mutually isolated terminals thereof being connected respectively to first and second adjacent mutually isolated terminals of said second power divider by said first and second delay lines, the third and fourth adjacent mutually isolated terminals of said second power divider being terminated to reflect received electromagnetic wave energy back to said first power divider, and said nonreciprocal phase element being connected into said second delay line.

4,207,548

TUNED CIRCUITS

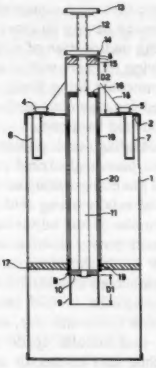
Peter B. Graham, Khandallah, and Roger J. Butland, Miramar, both of New Zealand, assignors to Del Technology Limited, Wellington, New Zealand

Filed Apr. 14, 1978, Ser. No. 896,674

Claims priority, application New Zealand, Apr. 21, 1977, 183919

Int. Cl.[2] H01P 7/04

U.S. Cl. 333—225 **1 Claim**



1. A tuning mechanism for a coaxial resonator comprising: a center conductor, said center conductor includes a slidable hollow plunger slidable with an electrically conductive rod extending through the plunger and passing at one end through an electrically conductive sealing plug for sealing the rod with a surrounding tubular conductor; said plunger is secured at its opposite end with a shorting plug that shorts the plunger and rod, the plunger having a free end thereof adjustably extendible from an adjacent end of a tubular conductor so as to vary the effective length of said center conductor and to tune said resonator to a required frequency, and in which at said adjacent end of said tubular conductor essentially a short circuit is presented by a three section compound transmission line comprising, sequentially, (a) a low impedance line essentially one quarter wavelength defined by the outer surface of the said plunger and the inner surface of the said tubular conductor, (b) a short re-entrant length of high impedance line defined by the inner surface of the said tubular conductor, the surface of the said rod and the adjacent end surface of the said plunger and (c) the inner surface of said plunger and the surface of said rod, the compound transmission line being terminated by the said shorting plug, and whereat no physical electrical contact between said tubular conductor and said plunger is present.

4,207,549

VHF TELEVISION TUNER CIRCUIT WITH SUPRESSION OF UNDESIRED SIGNALS

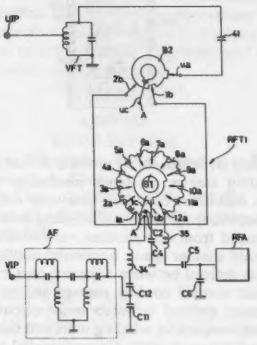
Katsuo Ito, and Kazuo Kontani, both of Kanazawa, Japan, assignors to Murata Manufacturing Co., Kyoto, Japan

Filed May 30, 1978, Ser. No. 910,890

Claims priority, application Japan, Jul. 7, 1977, 52-81814

Int. Cl.[2] H03J 5/00

U.S. Cl. 334—1 **11 Claims**



1. A VHF television tuner circuit for selecting a channel from a plurality of VHF television channels and a UHF/VHF converted television channel, by mechanical selection to form a resonant circuit having electrical characteristics corresponding to said selected channel, and thus to tune to a desired radio frequency signal, said turner circuit comprising:

first means for receiving television signals comprising VHF television signals, and producing said VHF television signals as an output thereof;

second means for receiving television signals comprising a UHF/VHF converted television signal, and producing said UHF/VHF converted television signal as an output thereof;

channel selection means for selecting one of a plurality of channel positions including VHF television channels and a UHF/VHF converted television channel corresponding to said selected channel;

a plurality of induction coils;

capacitor means; and

radio frequency amplifying means for selectively amplifying said desired radio frequency signal;

open circuit means responsive to selection of said UHF/VHF converted channel position for establishing an open circuit at the output of said first receiving means;

means responsive to selection of one of said VHF television channel positions for connecting corresponding at least one of said plurality of induction coils,

means responsive to selection of said UHF/VHF converted channel position for connecting said second receiving means to said radio frequency amplifying means,

means responsive to selection of one of said VHF television channel positions for connecting said capacitor means to corresponding at least one of said plurality of induction coils, thereby forming said resonant circuit having electrical characteristics corresponding to said selected one of said VHF television channels, and

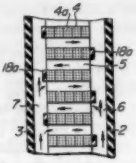
means positioned in the vicinity of said first receiving means and responsive to selection of said UHF/VHF converter channel position for electrostatically shielding said first receiving means.

4,207,550

WINDING STRUCTURE OF ELECTRIC DEVICES

Takahiro Daikoku, Ushikumachi; Wataru Nakayama, Kashiwa, and Taisei Uede, Hitachi, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 23, 1978, Ser. No. 880,422
Int. Cl.[2] H01F 27/08
U.S. Cl. 336—60 9 Claims



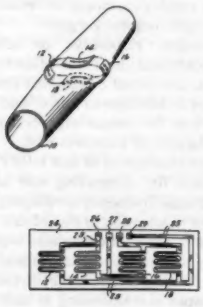
1. A winding structure for an electric device comprising: an inner insulating sleeve; an outer insulating sleeve radially spaced from said inner insulating sleeve to define an annular space therebetween; a plurality of winding units stacked vertically and spaced from one another, said winding units being disposed in said annular space, horizontal cooling passages for cooling fluids defined between adjacent ones of said winding units; an inner vertical cooling passage and an outer vertical cooling passage defined between inner circumferential end surfaces of said respective winding units and said inner insulating sleeve and between outer circumferential end surfaces of said respective winding units and said outer insulating sleeve, respectively, said inner and outer vertical cooling passages communicating with each other through said horizontal cooling passages; and flow controlling bodies disposed in at least one of said inner and outer vertical cooling passages in a manner so as to extend circumferentially continuously and confront alternating ones of said winding units and having a radial breadth which is smaller than the radial breadth of said at least one of said vertical cooling passages, thereby ensuring that a part of the cooling fluid in said inner and outer vertical cooling passages flows in opposite directions through all immediately adjacent horizontal cooling passages.

4,207,551

PRESSURE TRANSDUCER

Hans Kautzky, 427 W. Blair, West Chicago, Ill. 60185

Division of Ser. No. 666,201, Mar. 12, 1976, abandoned. This application Sep. 8, 1977, Ser. No. 831,690
Int. Cl.[2] G01L 1/22
U.S. Cl. 338—4 5 Claims



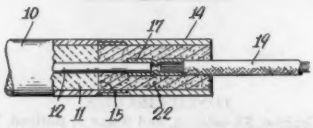
1. A pressure transducer comprising a hollow metal tube having a noncircular cross-section with two-fold symmetry, and two pairs of diametrically opposed active strain gages mounted on a single surface of said tube at points of symmetry thereof, said strain gages each being aligned to respond to bending strain in a transverse tangential direction, said metal tube being adapted to be welded into fixed relation with a source of fluid whereby said transducer can respond to the pressure of said fluid.

4,207,552

ELECTRIC HEATING ELEMENTS

Richard W. Brent, Pittsburgh, Pa., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 30, 1978, Ser. No. 964,956
Int. Cl.[2] H01C 1/14
U.S. Cl. 338—322 10 Claims



1. A termination for an electric heating element having a metal sheath, a heating resistor within said sheath, a terminal pin electrically connected to an end of said resistor at a location within said sheath and having an end portion extending outwardly of an end of said sheath, heat-conducting material within said sheath and electrically insulating said terminal pin from said sheath, the improvement comprising:

a tubular metal connector having an inner end receiving the outwardly-extending end portion of said terminal pin and an outer end receiving the bare end of an insulated power conductor, said connector being freely accessible so that its ends are exposed for easy electrical connection to said pin end portion and said bare end,

a rigid sleeve surrounding said power conductor in a standby position to permit electrical connection of said connector and said pin end portion and said bare end, and subsequently moved axially along said power conductor to surround said connector and adjoining parts of said pin end portion and said power conductor in a manner to provide an annular space therebetween, an inner end of said sleeve being connected to said sheath end in a manner as to provide an extension of said sheath which is not materially different in transverse size, and

cement poured into said annular space and permitted to harden to encapsulate said connector and said adjoining parts and to provide a strain relief for that part of the insulated power conductor which extends outwardly of said sleeve.

4,207,553

CONTROL APPARATUS FOR VEHICLE DIRECTIONAL LAMPS

Tiaki Mizuno, Toyota, and Yoshichi Kawashima, Gifu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Oct. 25, 1977, Ser. No. 845,073
Claims priority, application Japan, Dec. 25, 1976, 51-156981
Int. Cl.[2] B60Q 1/38; G08B 5/38, 21/00
U.S. Cl. 340—73 4 Claims

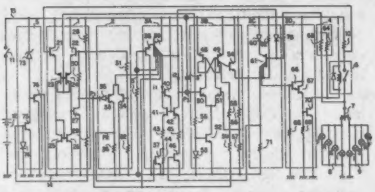
1. In a direction indicating system in which either one of two lamp groups, each thereof having at least front, rear and side directional lamps connected in parallel with each other, is energized by a battery and flash periodically for indicating the turning direction of a vehicle and in which the wattage of at least the side directional lamps is different from the said front and rear lamps in the respective groups, improved control apparatus comprising:

a resistor, connected in series with said battery, for developing a voltage thereacross corresponding to the electric

current flowing from said battery to an energized one of said lamp groups;

an amplifier, connected to be responsive to said voltage developed across said resistor, for producing an output signal having a first constant level indicative of no disconnection of said front, rear and side directional lamps of said energized group, a second constant level indicative of the disconnection of at least one of said front and rear directional lamps of said energized group, and a third level intermediate between said first and second constant levels and indicative of the disconnection of said side directional lamp of said energized group;

a pulse signal generator, connected to be responsive to said output signal of said amplifier, for generating a train of pulse signals at first, second and third frequencies in response to said first, second and third levels of said output signal, respectively; and



switching means, connected to be responsive to said pulse signals, for energizing said lamp group periodically,

whereby the flashing frequency of said lamp group is changed in accordance with lamp disconnections,

said pulse generator including:

a constant current circuit for producing constant charging and discharging currents;

a capacitor, connected to be charged and discharged by said respective constant charging and discharging currents, for producing a triangular signal; and

a comparison circuit, connected to alternately compare the level of said triangular signal with predetermined high and low levels one of which is changed in accordance with said first, second and third levels of said output signal of said amplifier, for producing said pulse signals and allowing said constant current circuit to produce said charging and discharging currents alternately in synchronized relationship with said pulse signals.

4,207,554

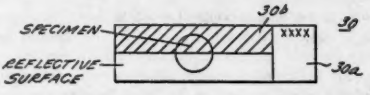
METHOD AND APPARATUS FOR AUTOMATED CLASSIFICATION AND ANALYSIS OF CELLS

Jerome B. Resnick, Trenton, N.J., and John W. Combs, Annville, Pa., assignors to Med-El Inc., Princeton, N.J.

Division of Ser. No. 596,964, Jul. 17, 1975, Pat. No. 4,125,828, which is a continuation-in-part of Ser. No. 277,992, Aug. 4, 1972, abandoned. This application Aug. 24, 1978, Ser. No. 936,487

Int. Cl.[2] G02B *21/34*; G06K *9/00*

U.S. Cl. 340—146.3 CA **10 Claims**



1. Apparatus for facilitating the analysis of a sample of cellular material,

said sample comprising a precipitation of cells stained with material so as to fluoresce when illuminated by light of predetermined wavelengths wherein the wavelength of the light emitted by the stains is determined by the type of cellular material to which the stain adheres, comprising:

a microscope slide member (whose) having a unitary examining surface (includes) including at least a first area portion having a light reflective coating and at least a second area portion having a non-reflective surface said first and second area portions being substantially coplanar and adjacent each other so that,

a sample of said cellular material is deposited upon adjacent reflective and non-reflective portions of said examining surface,

whereby the reflective area of the slide facilitates examination of individual cells through an absorption technique,

and the nonreflective area of the slide facilitates examination of individual cells through the examination of the fluorescent response of cellular materials.

4,207,555

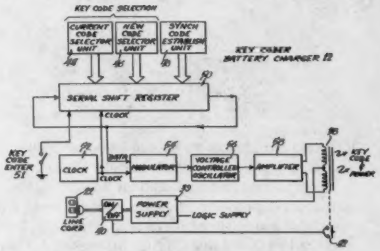
LOCK SYSTEM

John E. Trombly, Winchester, Mass., assignor to The Eastern Company, Naugatuck, Conn.

Filed Mar. 3, 1978, Ser. No. 883,204

Int. Cl.[2] H04Q *3/00*; E05B *49/00*

U.S. Cl. 340—147 MD **7 Claims**



1. A lock system comprising:

a key carrying a key code having a new code portion and a current code portion and;

a lock adapted to accept the key and having means for receiving the key code from the key;

means for retaining a lock code;

means for comparing the lock code to the current code portion of the key code each time the key is accepted by the lock;

means for actuating the lock if said lock code compares with the current code portion of the key code; and

means for providing said means for retaining a lock code with said new code portion of the key code each time the lock is actuated.

4,207,556

PROGRAMMABLE LOGIC ARRAY ARRANGEMENT

Yoshi Sugiyama, Tokorozawa, and Keisuke Kataoka, Higashiyamato, both of Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Dec. 5, 1977, Ser. No. 857,306

Claims priority, application Japan, Dec. 14, 1976, 51-149441; Mar. 30, 1977, 52-34726

Int. Cl.[2] H03K *19/08*

U.S. Cl. 340—166 R **14 Claims**

1. A programmable logic array arrangement, comprising:

a wiring matrix including a plurality of row lines and a plurality of column lines, the row and column lines being arranged in a matrix and including at least two conductive layers; and

a plurality of cell units, each cell unit including;

a function unit including;

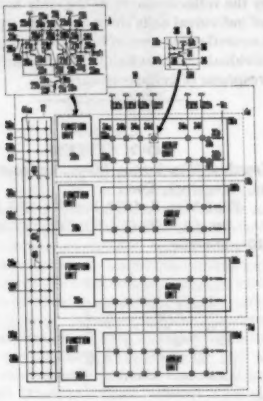
a first plurality of electronic elements; and

a first plurality of switching elements for selectively connecting each of the first plurality of electronic elements to said row and column lines;

said electronic elements and switching elements being arranged with respect to the wiring matrix so that both OR functions and AND functions may be implemented by each function unit by activating appropriate switching elements; and

an array unit including:

a second plurality of electronic elements; and



a second plurality of switching elements for selectively connecting said second plurality of electronic elements to said row and column lines;

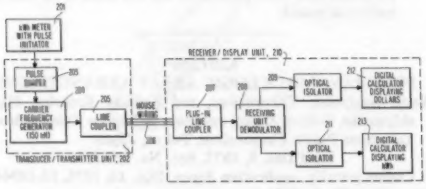
said second plurality of electronic elements and said second plurality of switching elements being arranged so that a plurality of different logic functions can be implemented in an array unit by activating the appropriate ones of said second plurality of switching elements.

4,207,557

USER ELECTRIC ENERGY CONSUMPTION APPARATUS

Robert F. Gilkeson, 1084 Broadview Rd., Wayne, Pa. 19087, and John B. Blose, 2195 Winding Way, Broomall, Pa. 19008

Filed May 20, 1977, Ser. No. 798,943
Int. Cl.[2] G08C *19/26*; G01R *21/06*
U.S. Cl. 340—178 **6 Claims**



1. User electric energy consumption apparatus connectable to an electric network having conductors and a user meter connected thereinto for evaluating energy consumption and the net cost thereof, comprising:

switch means for generating pulses, said pulse generating switch means being connected to said meter and have a pair of successively operated switches being set-reset interconnected;

pulse shaper means for providing a pulse of predetermined amplitude and duration, said shaper means being responsive to said switch means;

signal means for imparting a coded signal upon said electric network conductors in response to pulses from said pulse shaper means, said coded signal imparting means being connected to the output of said pulse shaper means wherein said signal imparting means includes means, connected to said pulse shaper means, for generating a frequency, said frequency being generated in bursts, said frequency burst being said coded signal imparted to said electric network conductors;

means, located at a disparate point of said electric network for sensing said coded signal frequency bursts from said conductors;

first calculator means, connected to said signal sensing means, for calculating and digitally displaying energy consumption, said first calculator means including a first calculator programmed to perform chain addition and providing a digital display of consumption, said first calculator including a first decade counter connected to said signal sensing means and a first digital display connected to said first decade counter; and

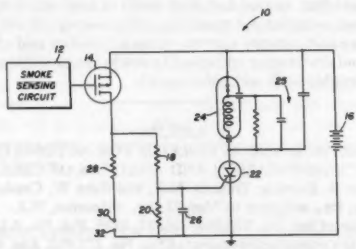
second calculator means, connected to said signal sensing means, for calculating and digitally displaying energy consumption cost, said second calculator means including a second calculator programmed to perform chain addition and a digital display of cost, said second calculator including a second decade counter connected to said signal sensing means and a second digital display connected to said second decade counter.

4,207,558

INTERCONNECTION CIRCUIT FOR A PLURALITY OF ALARM UNITS

John J. Kunzer, Elgin, Ill., assignor to Pittway Corporation, Aurora, Ill.

Filed Apr. 3, 1978, Ser. No. 892,884
Int. Cl.[2] G08B *17/10*
U.S. Cl. 340—524 **9 Claims**

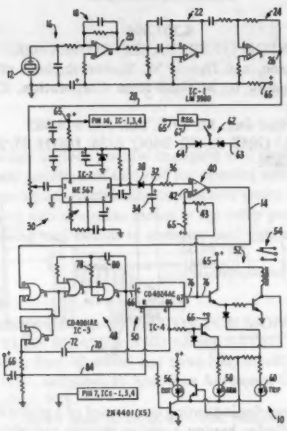


1. In an alarm unit adapted to be connected to at least one other alarm unit by a pair of wires, the alarm unit having a sensing circuit adapted to supply a signal in the presence of a predetermined event, a signalling device and a switching device and a power source coupled in series, the switching device having a control electrode coupled to the sensing circuit, whereby the presence of an event sensed by the sensing circuit renders the switching device conductive to supply current to activate the signalling device, the improvement comprising a terminal for connection to the one other alarm unit, and means coupled between said terminal and a point in the path between the sensing circuit and the control electrode of the switching device, whereby a short across the wires or an open in either of the wires will not prevent the signalling device from producing a signal in the presence of an event.

4,207,559
ALARM SYSTEM WITH ACOUSTICALLY COUPLED TRANSMITTERS AND RECEIVER

Michael M. Meyer, 1037D Shary Cir., Concord, Calif. 94518

Filed Sep. 26, 1977, Ser. No. 836,755
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—531 3 Claims



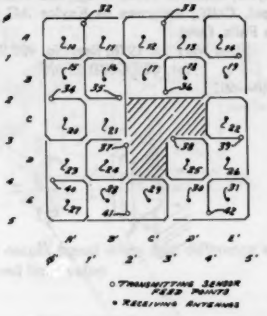
1. An acoustic receiver for an alarm system, comprising:
transducer means for receiving acoustic signals and transducing them into corresponding electrical signals;
bandpass means for eliminating from said corresponding electrical signals all frequency components lying outside a predetermined pass band, said bandpass means comprising a first stage and a second stage;
signal duration detecting means for receiving output signals from said second stage and producing a minimum duration detection signal whenever one of said output signals from said second stage is greater in duration than a predetermined minimum duration;
free-running pulse generating means for producing a train of pulses in response to each of said minimum duration detection signals;
counter means advanced from state to state by said pulses and producing a first state signal when in a first state and a second state signal when in a second state, and
pulse train interrupting means for interrupting said pulse trains in response to the occurrence of each of said first state signals.

4,207,560
R F AREA INTRUDER DETECTION AND TRACKING SYSTEM

J. Leon Poirier, Chelmsford, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 23, 1978, Ser. No. 936,160
Int. Cl.[2] G08B 13/24
U.S. Cl. 340—552 3 Claims

1. An intrusion detection system for detecting and locating intrusion events in an area to be protected comprising a multiplicity of electromagnetic wave transmitting transducers deployed to cover the area to be protected with a pattern of discrete enclosed regions, said transmitting transducers being lengths of transmission line defining region boundaries,
an electromagnetic wave transmitter feeding said transmitting transducers,
an electromagnetic wave receiving transducer within each discrete region,
a receiver connected to each receiving transducer, each said receiver generating an output signal in response to the violation by an intruding agent of any boundary defined by a transmitting transducer adjacent that receiver's receiving transducer, and

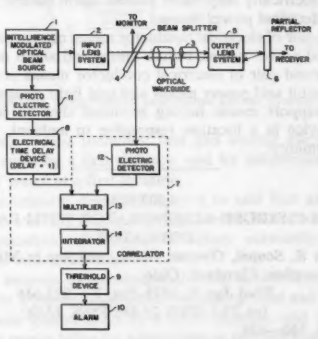


a coincidence logic circuit receiving the outputs of said receivers and being adapted to develop an intrusion occurrence signal for each region boundary in response to the coincident outputs from adjacent receiving transducers.

4,207,561
INTRUDER ALARM ARRANGEMENT FOR AN OPTICAL COMMUNICATION SYSTEM

Peter D. Steensma, Midland Park, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 31, 1975, Ser. No. 627,585
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—600 10 Claims



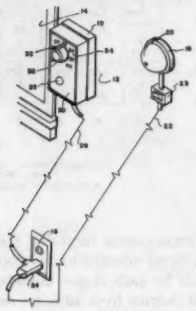
1. An intruder alarm arrangement for an optical communication system comprising:
an optical waveguide;
first means disposed adjacent and optically coupled to one end of said waveguide to inject an intelligence modulated optical beam into said one end of said waveguide for transmission to the other end thereof;
second means disposed adjacent and optically coupled to said other end of said waveguide to reflect a portion of said beam back into said waveguide for transmission to said one end of said waveguide; and
third means disposed adjacent said one end of said waveguide and coupled to said first means and said one end of said waveguide to generate an alarm when the amplitude of said reflected beam falls below a given value.

4,207,562

APPARATUS FOR DETERMINING OPTIMUM HAY BALING CONDITIONS

Buford Kaylor, Klamath Falls, Oreg., and Wilford M. Kaylor, Sebastopol, Calif., assignors to Kaylor AG Products, Inc., Klamath Falls, Oreg.

Filed May 22, 1978, Ser. No. 907,971
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—602 2 Claims



1. A device to indicate proper conditions for baling hay which comprises:

(a) a humidity sensing device comprising an electrical switch with a switch operator biased to a normally open position, a switch lever,

a band of humidity sensitive material that dimensionally contracts upon increasing humidity attached at one end to an abuttment and at the other end to said lever to urge said lever against said switch operator, and fixed adjustment means to control the tension on said band sufficient to close said switch at a relative himidity from 55 to 75 percent;

(b) electrically responsive audible alarm means;

(c) electrical power means;

(d) a pair of electrical conductor means connecting in circuit said power means, switch means and alarm means and a second pair of electrical conductor means connecting in circuit said power means and said light means; and

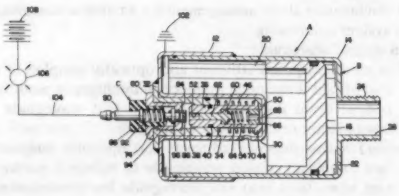
(e) support means having mounted thereon said sensing device in a location responsive to ambient, outside air humidity.

4,207,563

GAS CHARGED ACCUMULATOR WITH FAILURE INDICATOR

Thomas R. Soupal, Owosso, Mich., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 8, 1978, Ser. No. 913,646
Int. Cl.[2] G08B 21/00; F16K 37/00
U.S. Cl. 340—626 10 Claims



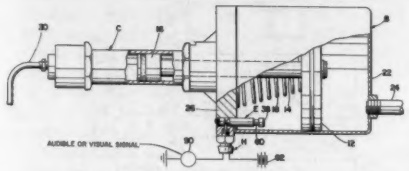
1. A gas chamber having a fill opening through which said chamber is chargeable with gas pressure, indicator means for indicating a discharged condition of said chamber, said indicator means including an indicator operating assembly mounted in said opening, movable pressure responsive indicator operating means for cooperating with said operating assembly to operate said indicator means in response to a discharged condition of said chamber, and said chamber being chargeable with gas pressure through said fill opening and through said pressure responsive indicator operating means when said indicator operating assembly is removed from said opening.

4,207,564

PISTON OVERTRAVEL INDICATOR

Larry E. Isakson, and Dennis M. Stanuszek, both of Owosso, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 12, 1978, Ser. No. 914,382
Int. Cl.[2] G08B 21/00; B60Q 1/26; H01H 35/38
U.S. Cl. 340—626 7 Claims



1. An indicator for indicating overtravel of a piston comprising: a fluid cylinder having a piston therein movable from a rest position adjacent one cylinder end to working positions displaced from said rest position toward the other cylinder end, a hole through said other cylinder end extending parallel to the direction of movement of said piston, an elongated indicator rod slidably received in said hole, said rod having an inner rod end positioned within said cylinder adjacent said working positions for engagement by said piston upon overtravel of said piston beyond said working positions to move said rod outwardly through said hole, said rod having an outer rod end opposite from said inner rod end, a switch having a yieldable switch plunger extending laterally into said hole for engaging said rod, inner and outer circumferential grooves in the outer periphery of said rod respectively located adjacent said inner and outer rod ends, said switch having open and closed positions and being in one of said positions when said plunger is received in said outer groove and being in the other of said positions when said plunger is received in said inner groove, said outer groove cooperating with said plunger for preventing complete displacement of said rod inwardly through said hole, and said inner groove cooperating with said plunger for preventing complete displacement of said rod outwardly through said hole.

4,207,565

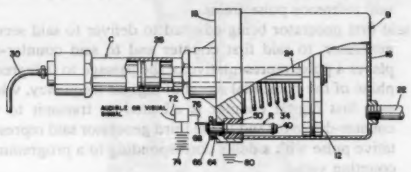
PISTON OVERTRAVEL INDICATOR

Larry E. Isakson; Dennis M. Stanuszek, and William E. Fritsche, all of Owosso, Mich., assignors to Midland-Ross Corporation, Cleveland, Ohio

Filed Jun. 12, 1978, Ser. No. 914,500
Int. Cl.[2] G08B 21/00; B60Q 1/26; H01H 35/38
U.S. Cl. 340—626 10 Claims

1. An overtravel indicator for a piston received in a cylinder having an end wall toward which the piston moves, mounting means for slidably mounting an elongated indicator rod through said end wall, said rod having an armed position extending inwardly of said cylinder through said end wall and an operated position extending outwardly of the cylinder through said end wall, said mounting means including electrically conductive yieldable abutment means cooperating with stop means on said rod for releasably retaining said rod in said armed position, an electrically operated indicator device positioned in an electrical circuit, said rod and said abutment means

being connected in series in said circuit for flow of electrical current through said rod and abutment means to complete said circuit when said rod and abutment means are in electrical conductive engagement with one another, said rod having a



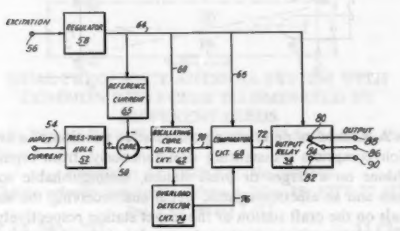
dielectric outer surface portion engaging said abutment means in one of said positions of said rod for opening said circuit, and said rod having an electrically conductive outer surface portion engaging said abutment means in the other position of said rod for closing said circuit to energize said indicator device.

4,207,566

DC CURRENT LEVEL DETECTOR FOR MONITORING A PITOT TUBE HEATER AND ASSOCIATED METHOD

Robert Gitlin, East Meadow, and Evan Mayerhoff, Great Neck, both of N.Y., assignors to American Aerospace Controls, Inc., Farmingdale, N.Y.

Filed May 5, 1978, Ser. No. 903,195
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—664 14 Claims



13. A method of actuating a relay to indicate malfunctioning of a pitot tube heater, said method comprising generating a reference amount of flux in a core, generating a second amount of flux in said core according to current flowing through said heater for algebraic combination with the reference flux, generating an oscillating flux in said core for combination with the algebraic combination of flux, and converting the thusly resulting flux into a signal to operate said relay.

4,207,567

BROKEN, CHIPPED AND WORN TOOL DETECTOR

Richard O. Juengel, Romeo, and Kenneth J. Cook, Troy, both of Mich., assignors to The Valeron Corporation, Oak Park, Mich.

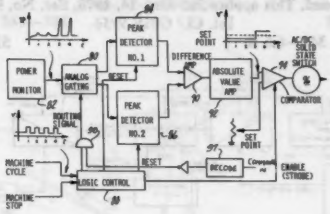
Filed Nov. 17, 1977, Ser. No. 852,341
Int. Cl.[2] G08B *21/00*
U.S. Cl. 340—680 4 Claims

1. A method of detecting broken, chipped and worn cutting tools in a machine tool carrying out successive cuts for removing stock, said method comprising the steps of:

monitoring the electrical power dissipated by said machine tool during different time intervals during the same cut and generating signals proportional thereto;

storing said signals in temporary storage devices;

comparing the signals and determining the difference therebetween which is indicative of the slope of the power dissipated by the machine tool during one cut; and



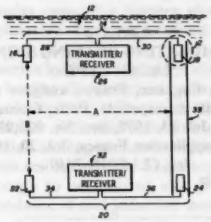
generating an output signal when said difference exceeds a predetermined limit value.

4,207,568

UNDERWATER COMMUNICATIONS SYSTEM

Norman C. MacLeod, Sunnyvale, Calif., assignor to Technology Development Corporation, Santa Clara, Calif.

Filed Jun. 26, 1978, Ser. No. 919,248
Int. Cl.[2] H04B *13/02*
U.S. Cl. 340—852 17 Claims



1. An improved underwater communications system comprising:

first antenna means including first and second electrodes spaced apart by a first distance, and for submersion in a body of water at a first location;

a first transmission device connected to said first antenna means for causing an electric transmission field containing communication information to radiate outwardly from said first antenna means;

a second antenna means separated from said first antenna means by a second distance and including third and fourth electrodes spaced apart by a third distance, said second antenna means being for submersion in said body of water at a second location remote from said first location but within the range of said transmission field;

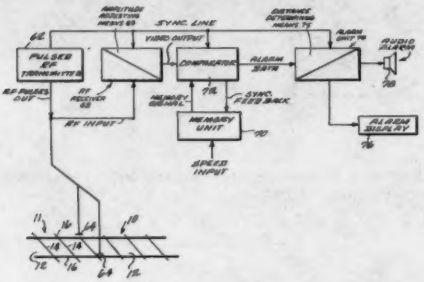
a first reception device connected to said second antenna means for receiving the communication information contained within said electric transmission field; and

an elongated, electrically nonconducting tube means extending from said first location to said second location, said tube means being filled with an electrically conductive fluid and having a first end portion coupled to said second electrode, and a second end portion coupled to said fourth electrode such that the conductive fluid within said tube means provides a first conductive path between said second and fourth electrode and said body of water provide a second conduction path between said first and third electrodes.

4,207,569
RAILROAD RADIO FREQUENCY WAVEGUIDE

Jack R. Meyer, 3223 Highland La., Fairfax, Va. 22030

Continuation-in-part of Ser. No. 823,093, Aug. 9, 1977, abandoned. This application Aug. 14, 1978, Ser. No. 933,508
Int. Cl.[2] G01S 9/56
U.S. Cl. 343—6.5 R 51 Claims

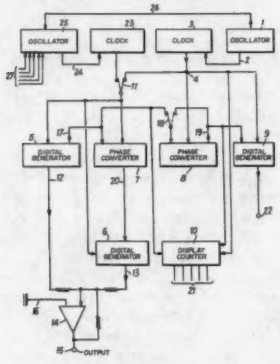


1. In combination:
a system for transferring data along a railroad line comprising a waveguide, radio frequency transmitter and radio frequency receiver, said waveguide comprising:
at least one rail of said railroad line; and means for supporting said rail.

4,207,570
DEVICE FOR SIMULATING BEARING SIGNALS OF THE TACAN TYPE

Claude A. Gouley, Cugnaux, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 13, 1978, Ser. No. 923,931
Claims priority, application France, Jul. 20, 1977, 77 22211
Int. Cl.[2] G01S 7/40
U.S. Cl. 343—106 R 7 Claims

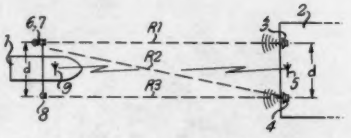


1. A device for simulating bearing signals of the TACAN type, formed by a modulation signal carried by a high frequency signal and resulting from the superposition of two sinusoidal signals of different low frequencies, as well as by spaced apart pulse trains, synchronised, at emission, with said modulation signal and representative of a determined orientation, said device comprising:
a quartz oscillator controlling a first fixed clock which controls in parallel:
a first digital generator adapted to product the equivalent of the siuusoidal signal of highest frequency,
a second digital generator adapted to produce the equivalent of the sinusoidal signal of lowest frequency,
a first digital counter with programmable counting value,
a digital counter-displayer and
a third digital generator adapted to produce the eqivalents of said reference pulse trains,
said first generator being adapted to deliver to said second generator, to said first counter and to said counter-displayer a pulse representative of the passage to 0 degree of phase of the sinusoidal signal of highest frequency, whilst said first digital counter is adapted to transmit to the counter-displayer and to the third generator said representative pulse with a delay corresponding to a programmed counting value.

4,207,571
NAVIGATIONAL AIDS

Ronald W. Passey, Brentford, England, assignor to S. Davall & Sons Limited, Greenford, England

Filed Mar. 16, 1978, Ser. No. 887,100
Claims priority, application United Kingdom, Mar. 29, 1977, 13147/77
Int. Cl.[2] G01S 5/14, 5/18
U.S. Cl. 343—112 R 5 Claims



4. A method of determining the relative position of a craft, which comprises transmitting simultaneously, from separate positions on a target or craft station, distinguishable sonic signals and an electromagnetic signal and receiving the sonic signals on the craft station or the target station respectively at two separate positions, both sonic signals being received at one position and one sonic signal at the other position, timing the reception of the sonic signals with reference to that of the electromagnetic signal, and determining from the timings three ranges from the first named two positions to the second named two positions, which three ranges define a position of the craft.

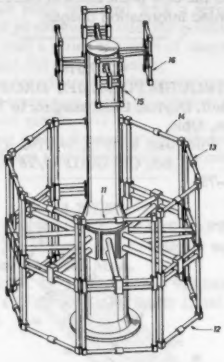
4,207,572
SKY WAVE DF ANTENNA SYSTEM

Jackie E. Hipp; Douglas N. Travers; Terence C. Green; William M. Sherrill, and Richard L. Johnson, all of Bexar County, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed Oct. 25, 1977, Ser. No. 845,282
Int. Cl.[2] G01S 3/06
U.S. Cl. 343—113 R 36 Claims

36. Antenna apparatus for providing the azimuth bearing of a transmitter where the incident signal from the transmitter has an angle of elevation of between 0 and 90 degrees and where the incident signal includes vertical and horizontal components of any amplitude or phase, the antenna apparatus comprising:
(a) at least two fixed pairs of coaxially aligned simple loop antennas, each pair providing both a simple loop output

signal and spaced loop output signal, and wherein each pair of said antennas has nonparallel horizontal axes; and



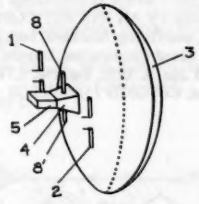
(b) means provided with said antenna output signals for processing their output signals to form a bearing indication of the transmitter.

4,207,573

DUAL-FREQUENCY ANTENNA SYSTEM WITH COMMON REFLECTOR ILLUMINATED BY DIFFERENT FEEDS

Claude Vignier, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 17, 1978, Ser. No. 906,860
Claims priority, application France, May 18, 1977, 77 15305
Int. Cl.² H01Q 1/52
U.S. Cl. 343—727 **12 Claims**



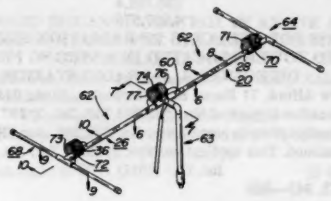
1. An antenna system comprising:
primary feed means including a conductive structure establishing a predetermined propagation path for radiation of a first frequency;
elongate secondary feed means skew to said path and independent of said primary feed means establishing a field of radiation of a second frequency close enough to said path to cause distortion of the radiation pattern of said second frequency by said structure; and
corrective conductor means geometrically similar and parallel to said secondary feed means projecting from said structure generally transversely to said path at a location where currents induced in said structure by said field are substantially at a maximum.

4,207,574

PORTABLE DIPOLE ANTENNA WITH END LOADING

Michael J. Tois, 10814 Braeburn Rd., Columbia, Md. 21044

Filed Sep. 8, 1978, Ser. No. 940,584
Int. Cl.² H01Q 9/16
U.S. Cl. 343—752 **9 Claims**



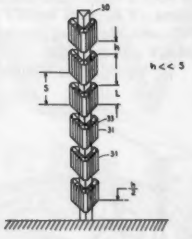
1. An antenna comprising:
a driven antenna element for radiating radio frequency energy including first and second dipole members, each of said dipole members having driven and non-driven ends;
a continuous inductive matching element coupling said driven ends of said first and second dipole members to one another and through which said driven element is fed with radio frequency energy to be radiated;
a tubular first capacitive loading element;
a first inductive loading coil element coupling said first capacitive loading element to said non-driven end of said first dipole member;
a tubular second capacitive loading element, said first and second tubular capacitive loading elements being rotatively displaceable for predetermined angular polarization;
a second inductive loading coil element coupling said second capacitive loading element to said non-driven end of said second dipole member, wherein the combination of said dipole members with said inductive matching element, said capacitive loading elements, and said inductive loading elements resonates at the frequency of said radio frequency energy to be radiated and presents a predetermined impedance at said inductive matching element.

4,207,575

MEANS FOR REDUCING RE-RADIATION FROM TALL GUYED TOWERS LOCATED IN A STRONG FIELD OF A DIRECTIONAL AM RADIO STATION

Andrew Alford, 71 Bacon St., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 808,290, Jun. 20, 1977, abandoned. This application Jul. 7, 1977, Ser. No. 813,763
Int. Cl.² H01Q 9/34, 1/50
U.S. Cl. 343—874 **8 Claims**



1. Means for decreasing re-radiation from a conducting cylinder comprising (1) a transmitting antenna separated by some distance from said conducting cylinder, (2) a plurality of inductive impedances which are greater than the minimum value determined by the end of the pass-band of the conduct-

ing cylinder with the impedances, but less than 5 times the characteristic impedance of the cylinder sections between the impedances, said impedances being spaced at intervals less than a half wavelength long at the frequency of the electromagnetic field within which the conducting cylinder is located.

4,207,576

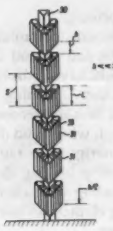
MEANS FOR REDUCING RE-RADIATION FROM TALL GUYED TOWERS LOCATED IN A STRONG FIELD OF A DIRECTIONAL AM RADIO STATION

Andrew Alford, 71 Bacon St., Winchester, Mass. 01890

Continuation-in-part of Ser. No. 813,763, Jul. 7, 1977, which is a continuation-in-part of Ser. No. 808,290, Jun. 20, 1977, abandoned. This application Nov. 3, 1978, Ser. No. 957,521

Int. Cl.[2] H01Q *1/52*

U.S. Cl. 343—885 **9 Claims**



1. Means for decreasing re-radiation from a conducting cylinder comprising:

(1) A transmitting antenna separated by some distance from said conducting cylinder,

(2) A plurality of inductive impedances inserted at regular intervals θ electrical degrees long at the wavelength of the inducing signal,

(3) Each such interval between inductive impedances being less than 180 electrical degrees long,

(4) Each inductive impedance being between $(110/\theta)\text{-}Z_o$ and $(550/\theta)\text{-}Z_o$ ohms, where Z_o is the characteristic impedance of the span between two successive inductive impedances.

4,207,577

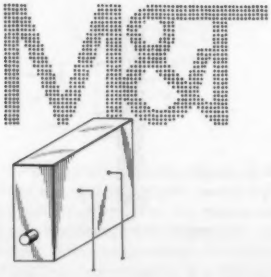
OPAQUE JET INKS

Ishwar R. Mansukhani, Neenah, Wis., assignor to Whittaker Corporation, Los Angeles, Calif.

Filed Sep. 13, 1978, Ser. No. 941,759

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—1.1 **3 Claims**



1. A process for information recording comprising producing a fine jet of liquid, directing said jet of colorless liquid onto a recording medium, modulating the density of the applied jet by an electric field in accordance with the information to be recorded, thereby recording said information, and subsequently adjusting the temperature ambient to said recorded information to the dew point ambient thereto, thereby rendering said recorded information opaque.

4,207,578

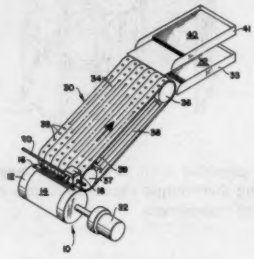
CATCH TROUGH FOR A JET DROP RECORDER

George Marinoff, Dayton, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jan. 8, 1979, Ser. No. 1,701

Int. Cl.[2] G01D *15/18*

U.S. Cl. 346—75 **9 Claims**



1. In a jet drop printing apparatus for copying or duplicating comprising support means for supporting a print receiving sheet, and

a printing head including an orifice plate provided with a series of orifices defining an array of jet printing nozzles for generating an array of parallel jets for printing information on a printing medium supported on said support means, the improvement comprising:

a fluid receiving aperture in said support means extending to the interior thereof and aligned below said printing head for receiving fluid from said printing head during startup of said printing apparatus and

means for removing fluid from the interior of said support means and connected to said fluid receiving aperture.

4,207,579

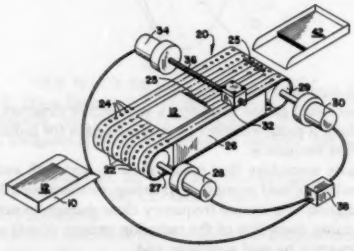
RECIPROCATING PAPER HANDLING APPARATUS FOR USE IN AN INK JET COPIER

Rodger L. Gamblin, and George Marinoff, both of Dayton, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jan. 8, 1979, Ser. No. 1,716

Int. Cl.[2] G01D *15/18, 15/28*

U.S. Cl. 346—75 **9 Claims**



1. Printing media handling system for jet drop printing apparatus for copying or duplicating comprising:

flat support means for supporting a sheet to be printed,

paper feeding means for feeding said sheet to said flat support means,

rotary drive means for driving said flat support means in both a forward and reverse direction,

a printing head positioned above said flat support means and including an orifice plate provided with a series of orifices defining an array of jet printing nozzles for generating an array of parallel jets to print a series of tracks of image information on said sheet on said flat support means,

advancing means for advancing said printing head in a direction generally transverse to the direction of movement of said flat support means, and

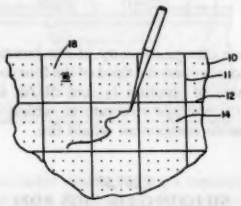
a paper receiving means for receiving said sheet from said flat support means after completion of printing thereon.

4,207,580

MATRIX PRINTING CHART PAPER

Joseph N. Lyons, Jr., Monson, Mass., assignor to Ludlow Corporation, Needham Heights, Mass.

Filed Jul. 28, 1978, Ser. No. 929,061
Int. Cl.[2] G01D *15/24*; B42D *15/00*
U.S. Cl. 346—136 **11 Claims**



1. A process for recording data using a stylus for marking a recording sheet wherein said marking comprises forming a continuous line of data on a background formed of

(a) matrices of dots, said dots being evenly spaced to represent pre-determined, incremental, data-representing quanta, and

(b) wherein said matrices of dots are enclosed by primary lines defining a polygon.

4,207,581

RECORDING INSTRUMENT MARKER MOUNTING ASSEMBLY AND PRECISION ADJUSTMENT CONTROL KNOB THEREFOR

Joseph Pelensky, Philadelphia, Pa., and William A. Tallerico, Willingboro, N.J., assignors to Graphic Controls Corporation, Cherry Hill, N.J.

Filed Jun. 23, 1978, Ser. No. 918,562
Int. Cl.[2] G01D *13/22*
U.S. Cl. 346—139 R **8 Claims**

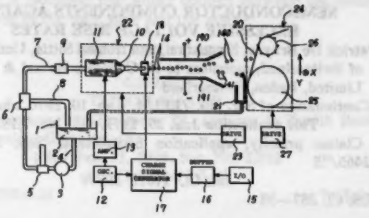
1. Recording instrument marker mounting assembly of the type adapted to couple a marker to an operating shaft of a recording instrument, said assembly comprising, a marker support arm, a mounting leg to be connected with an operating shaft of a recording instrument, cam means connecting said support arm and said mounting leg, cam follower means comprising a pair of cam follower surfaces defined by a cut out portion of said support arm, said cam means being positioned between said cam follower surfaces, fulcrum means connecting said support arm and said mounting leg to act as a fulcrum for pivotal movement of said support arm relative to said mounting leg whereby rotation of said cam actuates said pivotal movement, wherein the distance between said cam follower surfaces is less than the diameter of said cam means so as to provide an interference fit of said cam means and said cam follower surfaces whereby free play between said support arm and said mounting leg is prevented.

4,207,582

INK LIQUID ISSUANCE CONTROL IN AN INK JET SYSTEM PRINTER OF THE CHARGE AMPLITUDE CONTROLLING TYPE

Yoichi Yamamoto, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 6, 1978, Ser. No. 875,539
Claims priority, application Japan, Feb. 4, 1977, 52-12351
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **13 Claims**



1. In an ink jet system printer of the charge amplitude controlling type including means for generating print information data, which ink jet system printer emits charged ink droplets from a nozzle, deflects said charged ink droplets in accordance with said print information data and deposits said deflected ink droplets on a record receiving medium; an ink droplet issuance control system, for said printer comprising:

detection means for detecting the occurrence of said print information data and developing a detection output signal when said print information data is applied to said ink jet system printer;

determination means responsive to the absence of said detection output signal for developing a control signal when said detection output signal fails to occur after the lapse of a predetermined time period; and

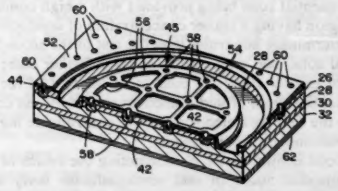
ink droplet issuance terminating means responsive to said control signal for terminating the issuance of the ink droplets from the nozzle when said control signal is developed from said determination means.

4,207,583

MULTIPLE GATED LIGHT FIRED THYRISTOR WITH NON-CRITICAL LIGHT PIPE COUPLING

Victor A. K. Temple, Clifton Park, N.Y., assignor to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 27, 1978, Ser. No. 928,464
Int. Cl.[2] H01L *29/74*
U.S. Cl. 357—38 **16 Claims**



1. A thyristor comprising: a semiconductor body having a

top surface and having at least four zones of alternate conductivity type, including an emitter zone extending to said top surface, and a base zone adjacent said emitter zone, a radiation receiving region on said top surface, contact means on said top surface in contact with said emitter zone and extending over portions of said radiation receiving region, said contact means including a plurality of openings for admitting radiation to said radiation receiving region, said contact means contacting said base zone at discrete locations within said radiation receiving region to form a plurality of emitter shorts whereby radiation penetrating said body at a plurality of random locations within said radiation receiving region produces substantially simultaneous thyristor turn-on at a plurality of separate locations.

4,207,584

SAFETY DEVICE FOR PROTECTING SEMICONDUCTOR COMPONENTS AGAINST EXCESSIVE VOLTAGE RISE RATES

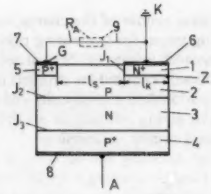
Patrick De Bruyne, Siggenthal, and Roland Sittig, Umiken, both of Switzerland, assignors to BBC Brown Boveri & Company Limited, Baden, Switzerland

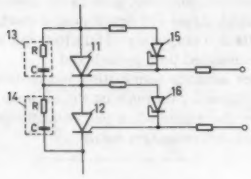
Continuation of Ser. No. 713,134, Aug. 10, 1976, abandoned. This application Jan. 29, 1979, Ser. No. 7,183

Claims priority, application Switzerland, Sep. 25, 1975, 12465/75

Int. Cl.² H01L *29/74*

U.S. Cl. 357—38 **4 Claims**





1. A safety device for protecting a controllable high power semiconductor component having an anode, a cathode, and a first gate electrode, against firing by excessive voltage rise rates dU/dt impressed across the component anode and cathode electrodes, comprising:

a semiconductor body having at least four sequential zones of alternating and opposite conductivity type, the second sequential zone being provided with a high concentration region having a higher concentration of conductivity type determining impurities than the rest of the second sequential zone, said semiconductor body further comprising,

a first emitter electrode contacting the first of the four sequential zones of said semiconductor body and connected to the first gate electrode of the controllable high power semiconductor component.

a second emitter electrode contacting the fourth of the four sequential zones of said semiconductor body and connected to the anode of the controllable high power semiconductor component,

a second gate electrode contacting the high concentration region of the second sequential zone of said semiconductor body, and

an ohmic conductor connected between said first emitter electrode and said gate electrode;

said first zone having a width l_K, said high concentration region of said second zone being separated from said first zone by a distance l_S, the lateral resistances in said second zone under said first zone being R_K and in the portion between said first zone and said high concentration region being R_S, and

said values of width l_K, distance l_S and resistance R_A being set at such values that the following equation is essentially satisfied:

$$0.6(V) = \tfrac{1}{2}(R_K l_K^2 + R_S l_S^2) + iR_A \qquad (V)$$

wherein

$$j = \frac{C}{F}\,\frac{dU}{dt} \text{ and } i = C\frac{dU}{dt},$$

and

C is the space charge capacity of the junction J_2 between said second zone and the third of the four sequential zones, F is the area of junction J_2, and dU/dt is less than the value of the voltage rise rate at which said protected semiconductor component would fire.

4,207,585

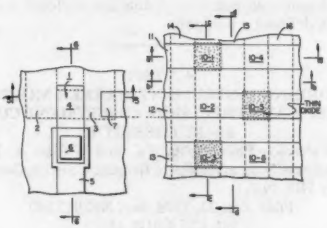
SILICON GATE MOS ROM

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 701,932, Jul. 1, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,502

Int. Cl.² H01L *27/04*

U.S. Cl. 357—41 **7 Claims**



1. An N-channel silicon gate metal-oxide-semiconductor read only memory comprising a P-type monocrystalline silicon chip, a thick thermal field oxide coating on most of a face of the chip surrounding moat areas and extending into the face of the chip, a plurality of elongated N+ silicon regions extending along the face beneath the field oxide, a plurality of address lines in the form of polysilicon strips extending along the face overlying the thick field oxide generally perpendicular to the elongated regions and extending across the elongated regions, potential MOS transistors existing at a plurality of areas between elongated regions beneath the polysilicon strips, thin gate oxide being located over the moat areas at some of the plurality of areas and thick field oxide being located at other of the plurality of areas, the field oxide being many times thicker than the gate oxide, the parts of the face of the chip at the areas beneath the gate oxide being moat areas in a plane substantially above that of the lower extremity of the field oxide, the level of the gate oxide being below that of the polysilicon strips and above that of the N+ regions, the N+ silicon regions extending up to the gate oxide at said moat areas to provide the source and drain regions of the MOS transistors, some of the

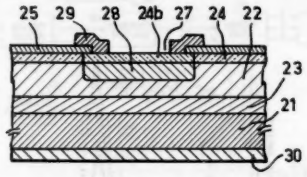
elongated N+ silicon regions providing ground lines and some providing output lines, and a peripheral transistor included in said face of the chip at a position spaced from said MOS transistors, the peripheral transistor having a gate formed by a part of one of the polysilicon strips and having heavily-doped source and drain regions self-aligned with said part, the source and drain regions being in a moat area in said plane.

4,207,586

SEMICONDUCTOR DEVICE HAVING A PASSIVATING LAYER

Jacques Lebailly, Caen, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,331
Claims priority, application France, Dec. 31, 1976, 76 39706
Int. Cl.² H01L *29/34*
U.S. Cl. 357—52 **11 Claims**



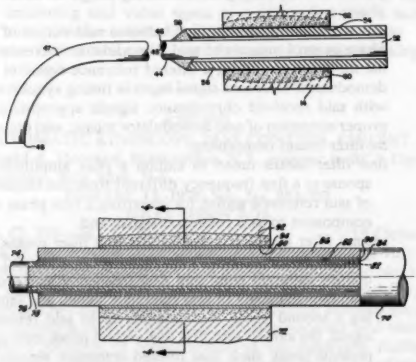
1. A semiconductor device having a monocrystalline semiconductor body of a first semiconductor material having a surface-adjoining first semiconductor region of a first conductivity type, a second semiconductor region of the second conductivity type, and a p-n junction formed between said first and second regions, the first semiconductor region being covered at least partly at its surface with a passivating layer of polycrystalline semiconductor material of the first conductivity type and comprising a second semiconductor material which differs from the first semiconductor material and which has a larger energy gap than the first material.

4,207,587

PACKAGE FOR LIGHT-TRIGGERED THYRISTOR

Maurice H. Hanes, Murrysville, and Lewis R. Lowry, Jr., Greensburg, both of Pa., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Continuation-in-part of Ser. No. 800,706, May 26, 1977, Pat. No. 4,131,905. This application Mar. 16, 1978, Ser. No. 887,006
Int. Cl.² H01L *23/02, 23/12, 27/14*
U.S. Cl. 357—74 **5 Claims**



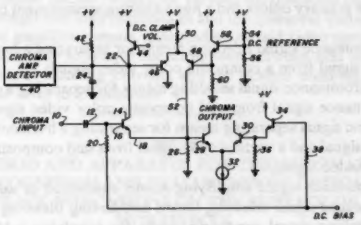
1. An hermetically sealed package for a light-triggered semiconductor device, comprising the combination of an electrical insulating body having a central cavity, a light-triggered semiconductor device within the cavity, first and second pole pieces positioned within opposite ends of the body and having respective inner pole faces juxtaposed with and electrically coupled to opposite sides of the semiconductor device, means for forming hermetical seals about the first and second pole pieces and respective ends of the body, a glass light pipe having an inner end optically coupled with a light-sensitive region of the semiconductor device and an outer end extending through the body, said outer end adapted to be optically coupled with a light source for triggering said device, a hollow metal sleeve mounted about a portion of the outer end of the light pipe, means for forming an hermetical seal between the light pipe and the sleeve comprising means forming a metallized region about the light pipe along the portion about which the sleeve is mounted, and solder bonded between the metallized region of the light pipe and the sleeve.

4,207,588

COLOR KILLER

Gopal Srivastava, Mt. Prospect, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Filed Jan. 11, 1979, Ser. No. 2,522
Int. Cl.² H04N *9/49*
U.S. Cl. 358—26 **7 Claims**



1. In a color television receiver having means for developing a chroma amplitude signal whose level varies with the level of a received chroma signal, and having a chroma channel for coupling the chroma signal therethrough, the improvement comprising:

first transistor means associated with the chroma channel for coupling the chroma signal therethrough, said first transistor means having a conduction level variable between a first state for coupling the chroma signal through the chroma channel and a second state for closing the chroma channel;

means receiving the chroma amplitude signal and sensing the conduction level of said first transistor means for developing a control signal whose level is a function of the level of the chroma amplitude signal and the level of conduction of said first transistor means;

second transistor means associated with a color killer circuit, coupled in a feedback arrangement with said first transistor means, and responsive to the control signal being of first and second predetermined levels for varying the conduction level of said first transister means such that the latter is quickly switched between its second and first states, respectively, for closing and opening the chroma channel,

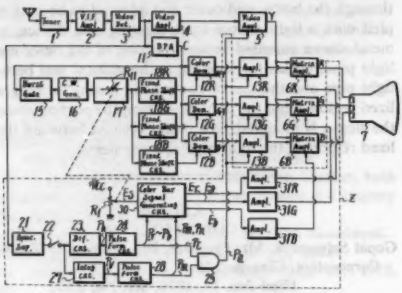
whereby hysteresis in the feedback loop occurs as a result of the change in the level of the control signal in response to changes in the level of conduction of said first transistor means, and power dissipation is reduced by utilizing said first transistor means both in the chroma channel and in the feedback loop of the color killer.

4,207,589

HUE ADJUSTMENT OF COLOR TELEVISION RECEIVER

Tsuneo Kawasaki, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 9, 1978, Ser. No. 876,236
Claims priority, application Japan, Feb. 17, 1977, 52-16525
Int. Cl.[2] H04N 9/535, 9/62
U.S. Cl. 358—28 15 Claims



1. A color television receiver having means for producing three primary colors and a hue adjusting arrangement comprising:

luminance signal selecting means for separating a luminance signal from a composite color video signal;

chrominance signal selecting means for separating a chrominance signal from said composite color video signal;

sync signal separating means for separating a horizontal sync signal and a vertical sync signal from said composite color video signal;

luminance signal amplifying means connected to said luminance signal selecting means and having blanking means;

blanking signal supplying means for supplying a blanking signal to said blanking means;

color demodulating means connected to said chrominance signal selecting means;

hue control means connected with said color demodulating means;

matrix means for adding demodulated color difference signals to said luminance signal and supplying a color television signal to a cathode ray tube;

pulse forming means connected to said sync signal separating means for feeding pulse signals to said blanking signal supplying means and being effective to blank one part of a television picture on a screen of said cathode ray tube;

first reference color signal generating means for producing a first set of three reference color signals for separately displaying predetermined strenghts of at least said three primary colors in first, second and third blanked areas of said screen, means responsive to a setting of said hue control means for mixing one of the remaining two of said three primary colors with the primary color in at least one of said first, second and third areas of said screen in dependence on the direction and magnitude of a difference between the setting of said hue control means and a hue center; and

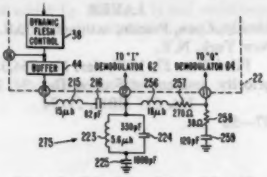
second reference color signal generating means for producing a second set of three reference color signals for separately displaying only predetermined strenghts of a different one of said three primary colors in each of fourth, fifth and sixth blanked areas respectively of said screen, the hue of said three primary colors in said fourth, fifth and sixth blanked areas being independent of the setting of said hue control means.

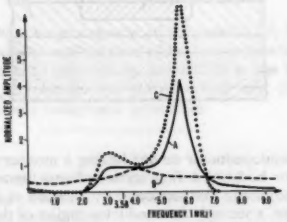
4,207,590

COMBINED PHASE SHIFT FILTER NETWORK IN A COLOR VIDEO SIGNAL PROCESSING SYSTEM EMPLOYING DYNAMIC FLESH TONE CONTROL

Saiprasad V. Naimpally, and Thomas D. Yost, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 14, 1979, Ser. No. 20,337
Int. Cl.[2] H04N 9/535
U.S. Cl. 358—28 8 Claims





1. In a system for processing color television signals including chrominance signals having a phase representative of image hue and a reference subcarrier component having a nominal phase relative to said chrominance signals; said system including chrominance signal demodulator means with an input coupled to receive said chrominance signals and a reference signal input, wherein proper operation of said demodulator means requires that chrominance and reference signals are applied with appropriate timing synchronism to said demodulator inputs; apparatus comprising:

phase control means responsive to said chrominance signals and to a signal derived from said reference subcarrier component, for providing an output signal including a phase controlled reference signal having a phase modified toward the phase of said chrominance signal when the phase of said chrominance signal is within a range of phases corresponding to a nominal range of flesh tone phase; and

composite filter means coupled between said output of said phase control means and said demodulator reference signal input for providing a filtered reference signal at said demodulator reference signal input in timing synchronism with said received chrominance signals appropriate for proper operation of said demodulator means, said composite filter means comprising:

first filter means tuned to exhibit a peak amplitude response at a first frequency different from the frequency of said reference signal, for imparting a first phase shift component to said reference signal; and

second filter means coupled to said first filter means and exhibiting a peak amplitude response at a second frequency different from said first frequency and greater than the frequency of said reference signal, and imparting a second phase shift component to said reference signal, the sum of said first and second phase shift components being such that filtered reference signals applied to said demodulator reference signal input exhibit said timing synchronism; and wherein

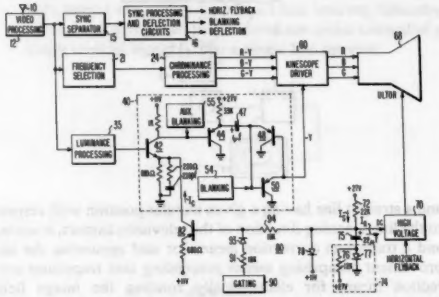
said composite filter means exhibits an amplitude versus frequency response in the region of the reference signal frequency such that amplitude and phase variations of said filtered reference signal in said region are small with expected changes in the frequency of said reference signal in said region.

4,207,591

GATED AUTOMATIC BEAM CURRENT LIMITER IN A VIDEO SIGNAL PROCESSING SYSTEM

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 9, 1978, Ser. No. 876,235
Int. Cl.[2] H04N *5/16, 9/16, 5/68*
U.S. Cl. 358—34 **14 Claims**



1. In a video signal processing system comprising a video signal processing channel containing means for establishing a reference level for said video signal during periodic image blanking intervals separating image information intervals of said video signal, said reference level establishing means including charge storage means, and said system also comprising means for reproducing an image in response to processed video signals, apparatus comprising:

means for deriving a signal representative of the magnitude of current drawn by said image reproducing means in response to signal image information occurring during said image intervals of processed video signals;

control means responsive to said derived signal for providing an output control signal when said current exceeds a predetermined threshold level, said control signal being proportional to the amount by which said threshold level is exceeded;

means for coupling said control signal to said channel for translating said video signal in a direction to limit said current above said threshold level; and

means for inhibiting said control signal during said blanking intervals.

4,207,592

AUTOMATIC KINESCOPE BIAS CONTROL CIRCUIT

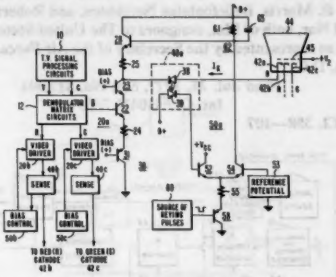
Leopold A. Harwood, Bridgewater, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,002
Int. Cl.[2] H04N *5/16*
U.S. Cl. 358—34 **13 Claims**

12. In a system for processing an image representative video signal having periodically recurring image intervals and blanking intervals, said system including an image reproducing kinescope having a plurality of intensity control electron guns each having a cathode electrode and an associated grid electrode; a plurality of video amplifiers for supplying finally amplified video signals to respective cathode electrodes of said kinescope from outputs of said amplifiers; a source of operating potential; and respective output circuits for said amplifiers, each including a load impedance, coupled between said source of operating potential and said outputs of said amplifiers, apparatus comprising:

means for sensing the magnitude of respective cathode currents of said kinescope;

means coupled to said sensing means for deriving control voltages during said blanking intervals respectively indicative of deviations of said cathode currents from a desired level during said blanking intervals; and



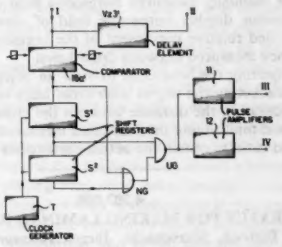
means for respectively coupling said control voltages to said amplifier output circuits for varying the quiescent current through said load impedances and the quiescent voltage at said amplifier outputs, independent of said video signal, in a direction to reduce the difference between said sensed cathode blanking currents and the desired blanking current level to a minimum.

4,207,593

METHOD AND APPARATUS FOR THE AUTOMATIC RECOGNITION AND EVALUATION OF OPTICAL CRACK INDICATIONS ON THE SURFACE OF WORKPIECES

Volker Deutsch, Wuppertal-Elberfeld; Ernst-August Becker, Sprockhövel-Schee, and Ulrich Förstermann, Sprockhövel, all of Fed. Rep. of Germany, assignors to Karl Deutsch Prüf- und Messgerätebau GmbH & Co. KG, Wuppertal, Fed. Rep. of Germany

Filed Jul. 27, 1977, Ser. No. 819,610
Claims priority, application Fed. Rep. of Germany, Jul. 31, 1976, 2634505; Aug. 4, 1976, 2635042
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—106 **26 Claims**



1. A method for the detection of cracks on the surface of workpieces, in which method, the surface is scanned line by line and image signals are generated, comprising the steps of:

(a) scanning the surface of a workpiece line by line employing individual scanning lines each having a width corresponding to the N-th part of the maximum crack width, from which evaluation is to proceed, N being an integer number;

(b) comparing the image signals of N successive scanning lines with the image signals of N preceding and of N succeeding successive scanning lines; and

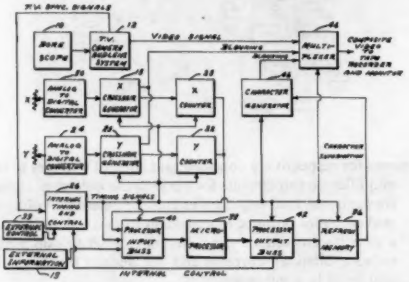
(c) generating a defect evaluation signal if the difference between the image signals of the N scanning lines and the image signals of the. N preceding and the N succeeding scanning lines exceeds a predetermined minimum value.

4,207,594

ELECTRONIC INDIRECT MEASURING SYSTEM

John R. Morris, Bellefontaine Neighbors, and Robert L. Grant, Bel Nor, both of Mo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 21, 1977, Ser. No. 817,641
Int. Cl.[2] H04N *7/18*
U.S. Cl. 358—107 **1 Claim**



1. A method for electronic indirect measuring with a borescope, comprising the steps of:

(a) manually measuring a first extreme field of view of a borescope relative to an object;

(b) manually measuring a second extreme field of view of a borescope relative to an object;

(c) recording the relative movement of the borescope between said first and second extreme fields of view;

(d) affixing a video system, including a camera and monitor, to the borescope;

(e) generating a plurality of cross hairs on the video system monitor;

(f) displaying the borescope field of view on the monitor;

(g) placing the cross hairs at the extreme of the borescope field of view;

(h) measuring the field of view between the cross hairs;

(i) calculating a ratio indicative of the difference in size of the manually measured borescope field of view and the monitor display borescope field of view using the recorded relative movement of the borescope and the distance measured between cross hairs;

(j) adjusting the borescope to view an object;

(k) bracketing the object with cross hairs on the monitor;

(l) measuring the distance between the cross hairs;

(m) and multiplying the bracketed measured distance by the said ratio to obtain the actual dimensions of the object.

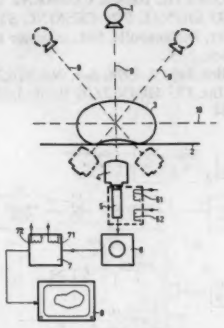
4,207,595

APPARATUS FOR MAKING LAMINAR RADIOGRAMS

Jürgen Dittrich, Marschacht; Jürgen Heinzerling, and Peter Lux, both of Hamburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1977, Ser. No. 862,688
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1977, 2718943
Int. Cl.[2] H04N *5/32*; G03B *41/16*; G01M *23/00*
U.S. Cl. 358—111 **7 Claims**

1. In an apparatus for producing laminar radiograms including an X-ray radiator and an image recording device mounted to image a subject at different positions with the optical axis of the image recording device maintained parallel to the central ray of the X-ray radiator, the image recording device including an image intensifier and a television camera, the apparatus further including a superposition device for forming laminar radiogram corresponding to a laminar plane of the subject by superposing individual images shifted by different amounts with respect to one another, and wherein the orbit angle ϕ, between the projection of the central ray on the laminar plane



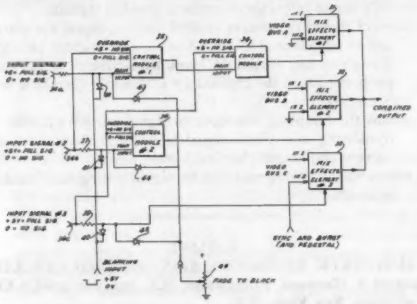
and a straight line having a given angular position with respect to the line scanning direction of the television camera, is varied and a trapezium correction means for said apparatus; the improvement comprising means preceeding said trapezium correction means for electronically rotating the image field through said orbit angle ϕ, and means following said trapezium correction means for restoring the position of said image field to its position before rotation thereof.

4,207,596

VIDEO SPECIAL EFFECTS WITH CASCADED CONTROL LOGIC

H. George Pires, Parlin, N.J., assignor to Crosspoint Latch Corp., Summit, N.J.

Filed May 15, 1978, Ser. No. 905,802
Int. Cl.[2] H04N *5/22*
U.S. Cl. 358—182 **14 Claims**



1. Combined mixing and effects unit for a first and second video signal comprising

difference amplifier means having a first and second signal input connected to receive said first and second video signal, respectively, a video output for furnishing an output signal having a first and second component varying as a selectable function of said first and second video signal, respectively, and a control input for receiving a control signal for controlling the gain from said first signal input to said video output and from said second signal input to said video output so that the amplitude of said output

signal remains constant and the ratio of said first to said second component varies in correspondence to the amplitude of said control signal:

means connected to said difference amplifier means for furnishing said control signal to said control input;

wherein said output signal has only said first and only said second component when the amplitude of said control signal is a first and second predetermined amplitude, respectively;

wherein said output signal has a predetermined value of said first component and a corresponding predetermined value of said second component when said control signal has a third predetermined amplitude; and

wherein said control signal has said first amplitude during a predetermined part of a selected one of the line intervals of said first and second video signals and said third amplitude during the remainder of said line interval, whereby mixing and special effects is carried out under control of a single control signal within a single line interval.

4,207,597

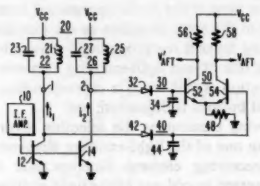
AFT CIRCUIT

Walter G. Gibson, Princeton, and Frank C. Liu, Piscataway, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1978, Ser. No. 955,516

Int. Cl.² H04N *5/50*

U.S. Cl. 358—195.1 **12 Claims**



1. Frequency discriminating apparatus for detecting the frequency deviation of an input signal from a predetermined reference frequency comprising:

a first tuned circuit having a resonant frequency which is lower than said predetermined reference frequency;

a second tuned circuit having a resonant frequency which is higher than said predetermined reference frequency;

a first amplifying device coupled in series with said first tuned circuit across two terminals of a power supply and responsive to said input signal for supplying a first signal current to said first tuned circuit;

a second amplifying device coupled in series with said second tuned circuit across said two terminals of a power supply and responsive to said input signal for supplying a second signal current of the same phase as said first signal current to said second tuned circuit; and

first and second detector networks respectively coupled to the junction of said first tuned circuit and said first amplifying device, and the junction of said second tuned circuit and said second amplifying device, for detecting voltage variations developed by said tuned circuits at said junctions in response to said input signal currents.

4,207,598

AUTOMATIC MAIL SENDING SYSTEM

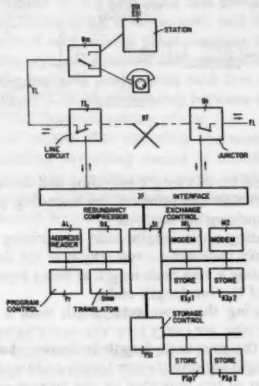
Hans Reich, Ludwigsburg, and Ekkehard Bajohr, Vaihingen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Jun. 27, 1975, Ser. No. 590,803

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1974, 2432398

Int. Cl.² H04N *7/16*

U.S. Cl. 358—257 **6 Claims**

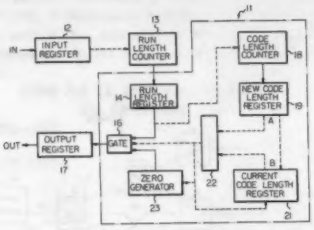


1. Apparatus adapted to provide letter mail service through a multiple exchange telecommunications switching network, including a plurality of sending and receiving stations, each station being associated with a telecommunications exchange of said network and coupled thereto over telephone lines, each station including means for receiving a letter in the form of at least one sheet of paper containing information including a letter message and destination address, means at a station for validating input conditions for said letter for signalling the associated exchange accordingly, means at said exchange responsive to said signal at one station for seizing a path over one of said telephone lines to idle memory means in its associated exchange in response to a letter placed therein, means at said station for reading the message and for sending said message to said associated exchange over said path, a memory store in the memory means of said associated exchange for storing the address and message information read from said letter, means operative on a request and responsive to stored address information for completing respective telecommunications paths through the switching network to destination exchanges represented by a portion of the respective stored address information, means for transmitting said stored message and address information for all letters from said sending exchange to the respective destination exchanges, means at the respective destination exchanges for storing said received message and address information within a memory store, means for reading said received message and address information from said last-mentioned memory store, and means at a receiving station associated with said destination exchange for printing each message and address read from said store as letter information on a sheet of paper.

4,207,599
RUN LENGTH ENCODING AND DECODING PROCESS AND APPARATUS

Noboru Murayama; Hayashi Taniguchi; Akira Konishi, and Hisashi Matsuda, all of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 25, 1978, Ser. No. 900,000
Claims priority, application Japan, Apr. 28, 1977, 52-49246
Int. Cl.[2] H04N 1/00, 1/40
U.S. Cl. 358—261 16 Claims



1. A process for run length encoding and decoding of binary data for facsimile transmission, an encoding portion of the process comprising the steps of:

(a) generating a run length code comprising a plurality of binary bits indicating a run length of the data;

(b) computing a new code length as being equal to a number of bits of the run length code;

(c) comparing the new code length with a current code length;

(d) when the new code length is shorter than the current code length altering the run length code so as to comprise a number of bits indicated by the current code length by inserting logical "0" bits in vacant high order places of the run length code and setting the current code length equal to the new code length; and

(e) when the new code length is longer than the current code length appending a shift code comprising a plurality of identical binary bits equal in number to the new code length to the run length code and setting the current code length equal to the new code length;

a decoding portion of the process comprising the steps of:

(f) sensing for presence of the shift code and setting the current code length equal to the number of bits of the shift code when the shift code is present;

(g) when the shift code is absent sensing for presence of inserted logical "0" bits and subtracting the number of inserted logical "0" bits from the current code length where inserted logical "0" bits are present; and subsequently

(h) reconstructing the binary data as indicated by the run length code and current code length.

4,207,600
TAPE-DRIVE MODE SELECTING AND ACTUATING MECHANISM FOR TAPE-RECORDER

Yasuyuki Nakahara, Yamanashi, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Shimosuwa, Japan

Filed Sep. 14, 1978, Ser. No. 942,240
Claims priority, application Japan, Sep. 27, 1977, 52-116270
Int. Cl.[2] G11B 15/18, 19/02
U.S. Cl. 360—71 4 Claims

1. A tape-drive mode selecting and actuating mechanism for a tape-recording apparatus comprising:

a frame body;

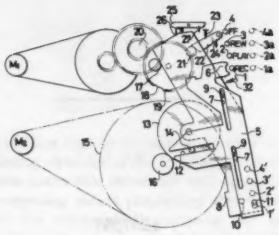
a plurality of operational buttons having associated means for generating electrical signals for changeover of the tape-drive modes, each of said operational buttons being manually selectable by the operator;

a plurality of operational terminals each movable a predetermined length for changeover of the tape-drive modes, said operational terminals each actuating a corresponding tape-drive mode mechanism when moved said predetermined length, said operational terminals aligned in a row;

a spring-biased push lever rotatably connected to said frame body;

a selecting lever selecting one of said operational terminals corresponding to the tape-drive mode selected by the operator, said selecting lever reciprocatingly movable on the push lever in the same direction as that of the row of the operational terminals, said selecting lever having a pushing portion for engaging and pushing one of said operational terminals the predetermined length required for changeover of the tape-drive mode;

moving means for reciprocatingly moving said selecting lever in response to an electrical signal generated when one of the operational buttons is pushed so that said pushing portion is adjacent an operational terminal corresponding to the pushed button;



driving means for moving said selecting lever so that the pushing portion of the selecting lever moves said corresponding one of the operational terminals said predetermined length;

light emitting elements 1', 2', 3' and 4' aligned on said push lever in the same order as the operational terminals 1, 2, 3 and 4 and in the same direction as the direction in which the selecting lever is reciprocatingly moved by said moving means, one of said light-emitting elements generating an illumination signal when a corresponding one of the operational buttons is depressed; and

a light-receiving element on the selecting lever selectively confronting one of the light-emitting elements and, when the light-receiving element receives said illumination signal generated in said one of the light-emitting elements, generating an electrical signal by which said moving means is stopped from operating and the selecting lever is stopped from moving.

4,207,601
TRANSIENT TEMPERATURE COMPENSATION FOR MOVING HEAD DISK DRIVE

Ashok K. Desai, Chatsworth; Abraham Brand, Encino; Eric M. Dunstan, Hidden Hills, and Raymond J. Marinello, Valencia, all of Calif., assignors to Pertec Computer Corporation, Los Angeles, Calif.

Filed Aug. 1, 1978, Ser. No. 929,913
Int. Cl.[2] G11B 5/56, 21/10; G05D 23/275
U.S. Cl. 360—78 8 Claims

1. A head positioning system for use in a disk drive having a spindle carrying a first disk fixed thereto and a second disk removable therefrom, said positioning system including:

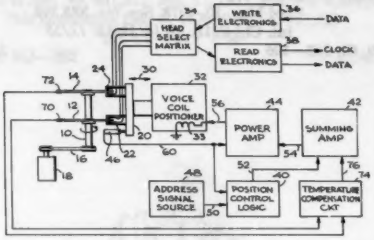
address means for supplying digital signals identifying particular areas of said first and second disks;

positioner coil means for moving heads over said first and second disks;

control means responsive to said digital signals for producing a current applicable to said positioner coil to move

said heads to said identified areas of said first and second disks;

sensing means for producing a temperature signal indicative of the difference in temperature between said first and second disks; and



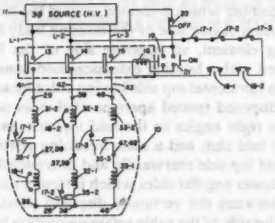
compensation means responsive to said temperature signal for modifying said current applicable to said positioner coil.

4,207,602

PROTECTOR MEANS FOR ELECTRIC MOTOR

Frank W. Kussy, Randallstown; John L. Haydu, Towson, and G. Erich Heberlein, Jr., Sykesville, all of Md., assignors to Gould Inc., Rolling Meadows, Ill.

Filed Oct. 30, 1978, Ser. No. 955,887
Int. Cl.[2] H02H *7/08*
U.S. Cl. 361—24 **7 Claims**



1. A three phase motor and protector means therefor;

said motor including first, second and third phase windings each comprising a first and a second section, said sections of said phase windings being connectible in a first wye-circuit array for energizing said motor from a relatively low voltage source and also being connectible in a second wye-circuit array for energizing said motor from a relatively high voltage source having approximately twice the voltage of said low voltage source;

said protector means including first, second and third overload relay heaters connected in electrical series with the respective said second section of said first phase winding, said first section of said second phase winding and said second section of said third phase winding;

contact means operatively associated with said heaters and being connected in a control circuit having an operating coil of an electromagnetic contactor through which said motor is energized;

in said first array said first section of first phase winding being connected from the center of the wye to a first energizing phase and being in parallel with the series combination of said first heater and said second section of said first phase winding, said second section of said second phase winding being connected from the center of the wye to a second energizing phase and being in parallel with the series combination of said second heater and said first section of said second phase winding, and said first section of said third phase winding being connected from the center of the wye to a third energizing phase and being in parallel with the series combination of said heater and said second section of said third phase winding;

in said second array said first heater being in series with said first and second sections of said first phase winding between the center of the wye and a first energizing phase, said second heater being in series with said first and second sections of said second phase winding between the center of the wye and a second energizing phase, and said third heater being in series with said first and second sections of said third phase winding between the center of the wye and a third energizing phase;

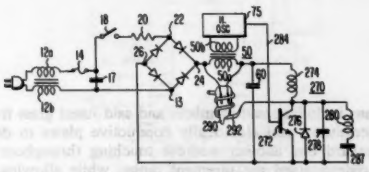
said protector means also including thermostatic switch means including switching means in circuit with said contact means and temperature sensing means for operating said switch means responsive to temperature of said motor detected by said sensing means.

4,207,603

SURGE PROTECTION OF FULL-WAVE RECTIFIER BY BIASED IONIZATION TUBE

Robert J. Giger, Mooresville, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 6, 1978, Ser. No. 949,062
Int. Cl.[2] H02H *3/20*
U.S. Cl. 361—56 **8 Claims**



1. A direct voltage supply for a television receiver adapted to be energized from a source of alternating current upon which voltage surges of uncontrolled magnitude may appear and which is intended to be enclosed within a housing, the voltage supply comprising:

full-wave rectifier means coupled to the source of alternating current for producing a pulsating direct current therefrom;

filter capacitor means;

impedance means coupling the output of said full-wave rectifier means to said filter capacitor means for coupling said pulsating direct current thereto for generating a direct voltage; and

an ionization device coupled to the horizontal deflection circuit for being ionized thereby and coupled across said impedance means for coupling to said capacitor means those surges exceeding the offset potential of said device.

4,207,604

CAPACITIVE PRESSURE TRANSDUCER WITH CUT OUT CONDUCTIVE PLATE

Robert L. Bell, Chatsworth, Calif., assignor to Kavlico Corporation, Chatsworth, Calif.

Continuation-in-part of Ser. No. 746,853, Dec. 2, 1976, Pat. No. 4,158,217. This application Apr. 20, 1978, Ser. No. 898,518

Int. Cl.[2] H01G 7/00

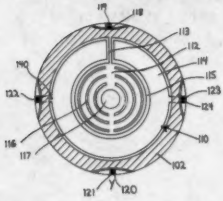
U.S. Cl. 361—283 4 Claims

1. A pressure sensor for use over a predetermined continuous pressure measurement range in environments subject to periodic high overload pressure comprising:

first and second ceramic insulating members having flat opposed parallel surfaces, one of said members being relatively thin with respect to the other member and being flexible when exposed to pressure;

a thin electrically conductive plate deposited on each of said insulating members flat opposed parallel surfaces facing one another, one of said plates defining a plurality of spaced apart non conductive cutout areas:

means for establishing an open gap between said electrically conductive plates, said open gap ranging between 0.1 and 20 milinches, said means consisting of fused glass frit positioned around the marginal edge portion between said two members, said fused glass frit also hermetically sealing the space between said members to form a chamber; and



means including said members and said fused glass frit for permitting said electrically conductive plates to deflect toward one another without touching throughout said predetermined measurement range, while allowing said plates to bottom out under high overload pressure conditions, so that said pressure sensor is protected against mechanical impairment and means including a cut-away central portion of the plate deposited on the thicker of said members for preventing electrical engagement of said two plates when said plates bottom out under high overload pressure conditions.

4,207,605

Patent Not Issued For This Number

4,207,606

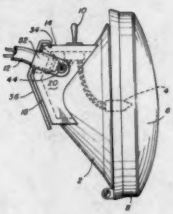
LUMINAIRE APPARATUS AND IMPROVED MEANS FOR CONNECTING SAME WITH A POWER SOURCE

John E. Gulliksen, Shrewsbury; Roy A. Guimond, Holden; Mark S. Martino, Marlborough, and Michael E. Collins, Northboro, all of Mass., assignors to Koehler Manufacturing Company, Marlborough, Mass.

Filed Mar. 10, 1978, Ser. No. 885,396

Int. Cl.[2] F21L 15/14; H01R 13/58

U.S. Cl. 362—106 5 Claims



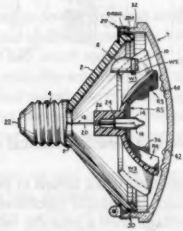
1. Luminaire apparatus of the cap lamp class including a cap member, a clip retaining bracket mounted externally of the cap member, a headpiece, lamp means mounted in the headpiece, a storage battery, electrical cable means arranged to electrically connect the battery with the lamp in the headpiece and energize same, said headpiece comprising a housing body having a reflector chamber which is located around the lamp means and which is closed at one side of the housing body by a radiation transmitting element, an opposite side of the housing body being formed with a housing extension, said housing extension presenting a horizontal top side having a slot located therethru, vertically disposed spaced apart parallel sides occurring substantially at right angles to the said top side and to opposite ends of the said slot, and a cable retaining portion extending from the said top side rearwardly and downwardly to provide upper and lower angular sides which intersect one another and which lie between the vertically disposed parallel sides, said upper angular side of the cable retaining portion being recessed to form a tapered cable opening through which the said electrical cable means is located, a resilient tapered bushing fitted around portions of the electrical cable means and engaging with the tapered cable opening, said bushing having a cross sectional diameter greater than that of the tapered cable opening and said bushing being further constructed with an axial length greater than that of the cable opening to provide an enlarged end which projects outwardly from the cable opening, a lever hook member engaged against the enlarged projecting end of the bushing, said lever hook member including a hooked edge, a depending angular lever part formed with a cable aperture through which the electrical means is received, and lug means formed integrally at opposite edges of the upper angular side part, said hooked edge being engaged in the said slot in the top side of the housing extension and said angular lever part being located in a position to exert compressive forces against the bushing, and said lug means being secured against the two vertical sides of the housing extension for maintaining the angular lever part in said position in which compressive forces are exerted.

4,207,607

LUMINAIRE APPARATUS FOR REFLECTING RADIANT ENERGY AND METHODS OF CONTROLLING CHARACTERISTICS OF REFLECTED RADIANT ENERGY

John E. Gulliksen, Shrewsbury, Mass., assignor to Koehler Manufacturing Company, Marlborough, Mass.

Division of Ser. No. 807,372, Jun. 17, 1977, Pat. No. 4,164,012.
This application Dec. 8, 1978, Ser. No. 967,528
Int. Cl.[2] F21V *7/00*
U.S. Cl. 362—282 3 Claims



1. In a method of controlling radiant energy, the steps which include reflecting energy from paraboloidal reflecting segments having a common focal point and differing focal lengths to provide substantially parallel rays, passing the rays in spot configuration through a control medium having radiation transmitting zones the planar projection of which correspond in shape and size to the planar projections of the said parabolic reflecting segments and which are separated by radiation modifying zones, and moving the control medium to interpose the radiation modifying zones in the path of travel of the substantially parallel rays and projecting the rays in a flood configuration.

4,207,608

ELEMENT FOR CONDUCTING LIGHT TO AN OUTSIDE SURFACE OF FURNISHING ARTICLE

Frederick C. Weingarth, P.O. Box 2341, Ft. Lauderdale, Fla. 33303

Filed Jul. 18, 1977, Ser. No. 816,341
Int. Cl.[2] F21S *1/12*
U.S. Cl. 362—410 14 Claims

1. An article of furniture or the like having an outside visible surface wherein at least a portion of said visible surface comprises:

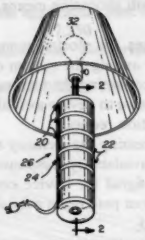
at least one light conductive element having an exterior surface defining a portion of said visible surface, and

at least one member having light conducting characteristics different from the light conducting elements, each member being positioned adjacent a light conductive element along said visible surface,

said light conductive elements and said members cooperating to define at least part of a hollow interior portion of said article of furniture, said hollow interior portion being adapted to receive light therein and;

said article of furniture further comprising:

bending means associated with said light conductive means for bending light traveling within the hollow interior from



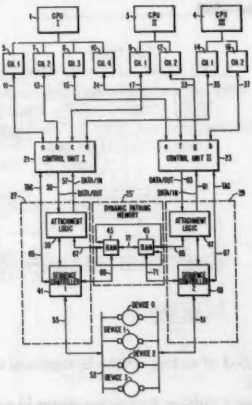
a path generally in alignment with said visible surface to a path generally transverse to said visible surface to create illuminated areas defined by said light conducting elements separated by differently illuminated areas defined by said members.

4,207,609

METHOD AND MEANS FOR PATH INDEPENDENT DEVICE RESERVATION AND RECONNECTION IN A MULTI-CPU AND SHARED DEVICE ACCESS SYSTEM

Fernando A. Luiz, Monte Sereno; Harlan C. Snyder, Saratoga, and John H. Sorg, Jr., Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1978, Ser. No. 904,050
Int. Cl.[2] G06F *13/04*
U.S. Cl. 364—200 7 Claims



1. In a system comprising at least a first and second CPU; shared input/output devices; at least a first and second set of fan-out paths (channels), each path set coupling a corresponding CPU as a source node; and at least a first and second control node, each control node including means for accessing the devices and for selectively intercepting predetermined paths from either set in order to complete a signal path connection to a single destination device;

characterized in that

the system further includes:

means for dynamically allocating dissimilar path sets to devices and CPU's on an allegiance basis for increasing the signal path connection probability by devices in re-

spect of their counterpart CPU's involved in the selection of reserved devices, or reconnection of a device to a counterpart CPU, said allegiance constituting an a priori association among a given CPU and at least one device for the purpose of processing reservations and access requests to the exclusion of other CPU's;

said dynamic path allocation means includes at each control node:

memory means for storing a map defining signal path availability among the system elements;

means for ascertaining device availability;

means responsive to device availability status for initiating a reconnection request;

means for accessing the memory means and for ascertaining path availability responsive either to a CPU-originated signal for device connection over an intercepted fan-out path or an available device reconnection request; and

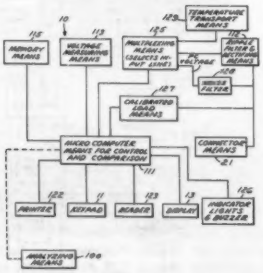
means for broadcasting any reconnection request over available paths between the control node and the CPU having the requisite device allegiance.

4,207,610

APPARATUS AND METHOD FOR TESTING AND CONTROLLING MANUFACTURE OF A VEHICLE ELECTRICAL SYSTEM

Thomas C. Gordon, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 18, 1978, Ser. No. 970,788
Int. Cl.[2] G01R *31/02, 17/02*
U.S. Cl. 364—580 **6 Claims**



1. A method of testing a vehicle electrical system including the steps of:

connecting a voltage measuring means in parallel across the vehicle battery;

measuring a voltage level across the vehicle battery in conjunction with actuating a portion of the vehicle electrical system;

comparing the measured voltage level to a predetermined voltage magnitude; and

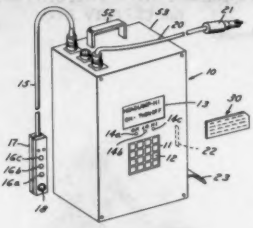
determining if the actuated portion of the electrical system is operating properly by observing if the voltage difference is substantially the same as the predetermined voltage magnitude, which would indicate acceptable or proper operation or if the voltage difference is substantially different from the predetermined voltage magnitude, which would indicate a malfunction or improper operation.

4,207,611

APPARATUS AND METHOD FOR CALIBRATED TESTING OF A VEHICLE ELECTRICAL SYSTEM

Thomas C. Gordon, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 18, 1978, Ser. No. 970,786
Int. Cl.[2] G01R *31/02, 17/02*
U.S. Cl. 364—580 **10 Claims**



1. A method of testing a vehicle electrical system including the steps of:

connecting a voltage measuring means in parallel across the vehicle battery and the vehicle electrical system;

measuring a first voltage level across the vehicle battery and the vehicle electrical system;

actuating a portion of the vehicle electrical system;

measuring a second voltage level;

calculating a voltage difference as a function of the first and second voltage levels;

comparisng the voltage difference to a predetermined voltage magnitude; and

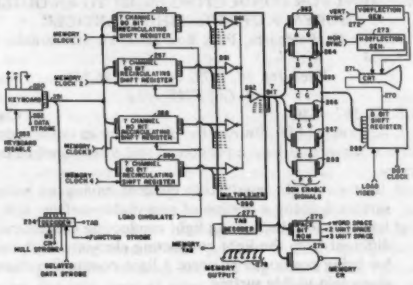
determining if the actuated portion of the electrical system is operating properly by observing if the voltage difference is substantially the same as the predetermined voltage magnitude, which would indicate acceptable or proper operation, or if the voltage difference is substantially different from the predetermined voltage magnitude, which would indicate a malfunction or improper operation.

4,207,612

ELECTRONIC TYPOGRAPHICAL DISPLAY DEVICE WITH JUSTIFICATION FEATURE

William R. Grier, New Vernon; Francis H. Shepard, Jr., Summit, and Arthur L. Ariedge, Basking Ridge, all of N.J., assignors to Realty & Industrial Corporation, Morristown, N.J.

Division of Ser. No. 622,172, Oct. 14, 1975, Pat. No. 4,054,948.
This application Aug. 1, 1977, Ser. No. 820,579
Int. Cl.[2] G06F *3/14*
U.S. Cl. 364—900 **12 Claims**



1. An alpha-numeric display system comprising a display device for displaying a line of characters between left and right

margins wherein said display device is periodically scanned at a given rate to display said line, comprising:

a first repetitively scanned character memory having a plurality of storage locations;

means for storing in said character memory first and second coded signals corresponding to characters and word spaces respectively;

means for sequentially reading out successive ones of said first and second coded signals from said character memory in response to stepping pulses;

means for generating said stepping pulses, with each stepping pulse delayed from the preceding stepping pulse by a time interval corresponding to the width of the preceding character or the desired width of the preceding word space;

means responsive to the first and second coded signals read out from said character memory for displaying said line of characters and word spaces;

a second repetitively scanned memory for storing third and fourth coded signals corresponding to stepping pulses for determining the ends of said time intervals corresponding to character widths and desired word space widths respectively;

means coupled to said second memory for increasing the time intervals defined by said fourth coded signals to increase the widths of the corresponding word spaces to justify said displayed line; and

means for reading out said third and fourth coded signals from said second repetitively scanned memory at said given rate and in synchronism with the scanning of said display device, said means for generating said stepping pulses being responsive to said third and fourth coded signals.

4,207,613

BUBBLE DEVICE CONTAINING A FERRITE BIASING MAGNET

Ernst M. Gyorgy, Madison, and Frank J. Schnettler, Harding Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 15, 1975, Ser. No. 640,482

Int. Cl.[2] G11C *11/02*

U.S. Cl. 365—27 **7 Claims**

1. A device comprising a substrate supporting an epitaxial layer, said layer being capable of evidencing uniaxial magnetic anisotropy capable of supporting local enclosed regions of magnetic polarization opposite to that of material surrounding said local regions, said epitaxial layer being represented by the formula $Eu_wCa_yRE_{3-w-y}(A)_zFe_{5-z}O_{12}$, in which RE is yttrium, lanthanum, or a rare earth selected from the lanthanide series of element numbers **58–62** and **64–71** of the Periodic Table; in which A is at least one element selected from the group consisting of Si, Ga, Ge, Al, and V; w is at least 0.5; z is from 1.00–1.20 where A is Si, Ge, or V, or a combination thereof and z is from 1.20–1.50 where A is Ga; in which y is essentially equal to z where A is Si, Ge, or a combination thereof and is equal to 2z where A is V, means for magnetically biasing said layer to stabilize said enclosed regions, means for positioning said enclosed regions within said layer, means for propagating said enclosed regions within said layer, characterized in that the composition of the material of said means for magnetically biasing is represented by the formula $Ni_{(1+x)}Fe_{(1+x)}Cr_{(1-x)}O_4$ with 0 to 10 percent by weight additional material selected from the group consisting of zirconium oxide, thorium oxide and hafnium oxide, and x is from 0.04 to 0.18.

4,207,614

MAGNETIC BUBBLE SHIFT REGISTER STORE

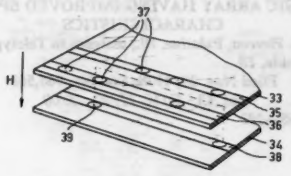
Gerrit Frens, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 765,625, Jan. 25, 1977, abandoned, which is a continuation of Ser. No. 563,069, Mar. 28, 1975, abandoned, which is a continuation of Ser. No. 387,103, Aug. 9, 1973, abandoned. This application Jun. 20, 1978, Ser. No. 917,250

Claims priority, application Netherlands, Sep. 2, 1972, 7212007

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—32 **22 Claims**



1. A magnetic bubble shift register comprising:

first and a second plate of magnetic material spaced apart from one another;

each plate capable of maintaining and moving magnetic bubbles;

a channel in each of said plates for transport of information and for storage of information by said bubbles; and

means for controlling the bubble energy levels in each of said channels comprising:

an intermediate elongated region within said magnetic material;

said region having a height different from the height of said channels.

4,207,615

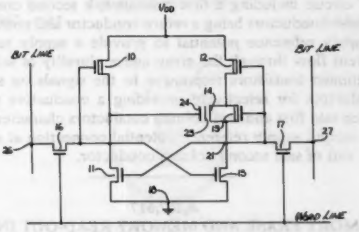
NON-VOLATILE RAM CELL

Jerry Mar, Sunnyvale, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 17, 1978, Ser. No. 961,753

Int. Cl.[2] G11C *11/40*

U.S. Cl. 365—95 **1 Claim**



1. An MOS memory cell comprising:

a first depletion mode transistor;

a first enhancement mode transistor coupled in series with said first depletion mode transistor;

a second and a third depletion mode transistors coupled in series;

a second enhancement mode transistor coupled in series with said second and third depletion mode transistors;

the gates of said first and second enhancement mode transistors being cross-coupled so as to form a bistable circuit

with said first, second and third depletion mode transistors;

an electrically programmable memory device having a floating gate and a control gate, said control gate being coupled to one of said gates of said enhancement mode transistors, the terminals of said device being coupled across said third depletion mode transistor so as to permit selective shunting of said third depletion mode transistor;

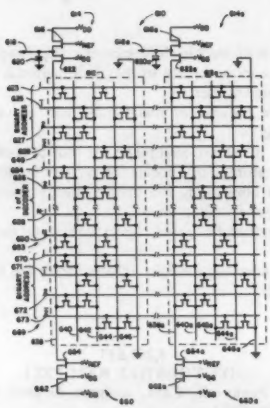
whereby said floating gate of said device is charged or discharged as a function of the state of said bistable circuit when said cell is powered down.

4,207,616

LOGIC ARRAY HAVING IMPROVED SPEED CHARACTERISTICS

Richard H. Heeren, Palatine, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 29, 1978, Ser. No. 964,568
Int. Cl.² G11C *11/40, 13/00*
U.S. Cl. 365—189 **10 Claims**



1. A logic array including a plurality of addressable row conductors, a plurality of column conductors each having a resistive value, a first one of said column conductors being an output conductor and terminated at a first end by a first "pull-up" circuit including a first resistance, a second one of said column conductors being a return conductor and connected to a supply reference potential to provide a supply return for current flow through the array and a plurality of selectively positioned transistors responsive to the signals on said row conductors for selectively providing a conductive path between said first and said column conductors characterized by:

a second supply reference potential connection at a second end of said second column conductor.

4,207,617

MEMORY ERASE AND MEMORY READ-OUT IN AN EL DISPLAY PANEL CONTROLLED BY AN ELECTRON BEAM

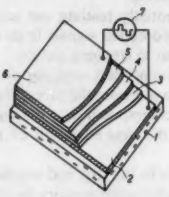
Shuhei Yasuda; Toshihiro Ohba, both of Tenri; Chugi Suzuki, Nara; Masayoshi Koba, Tenri, and Jun Kudo, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1978, Ser. No. 919,960
Claims priority, application Japan, Jun. 29, 1977, 52-78116; Sep. 29, 1977, 52-118293; Sep. 29, 1977, 52-118294; Oct. 12, 1977, 52-122641
Int. Cl.² G11C *11/42, 13/04*
U.S. Cl. 365—111 **18 Claims**

1. A drive system for erasing information written on a thin-film EL element including a thin-film EL layer sandwiched between a pair of electrodes, said drive system comprising:

means for applying a voltage signal between said pair of electrodes;

means for applying an electron beam to said thin-film EL element through one of said pair of electrodes; and



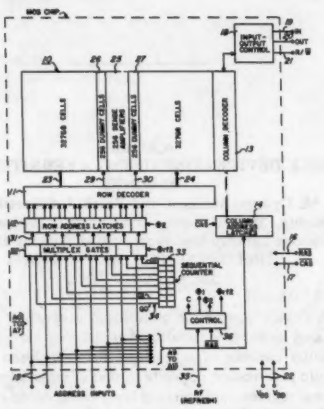
control means for applying said electron beam to a desired position on said thin-film EL element at a time when said voltage signal is at a level which will not excite the thin-film EL element thereby erasing information from said EL element.

4,207,618

ON-CHIP REFRESH FOR DYNAMIC MEMORY

Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 26, 1978, Ser. No. 918,891
Int. Cl.² G11C *7/00*
U.S. Cl. 365—222 **10 Claims**



1. A semiconductor memory device comprising an array of memory cells in a single integrated circuit formed in a semiconductor body, the memory device having a refresh address counter included within said body along with means for incrementing the counter and addressing means for alternatively receiving an address from inputs to the device or from the counter and for accessing the array using said address.

4,207,619

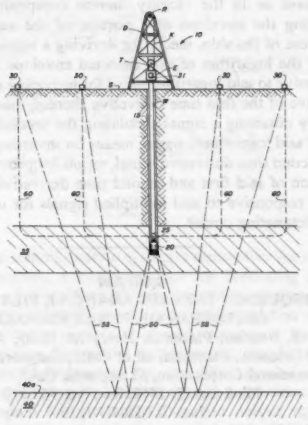
SEISMIC WELL LOGGING SYSTEM AND METHOD

Alf Klaveness, 12634 Taylorcrest, Houston, Tex. 77024

Filed Feb. 24, 1975, Ser. No. 552,250
Int. Cl.² G01V *1/20, 1/28*
U.S. Cl. 367—36 **20 Claims**

1. A method of obtaining and utilizing seismic data in drilling a well comprising the steps of:

(a) providing seismic pulse generator means substantially adjacent drill bit means as said well is being drilled;
(b) providing an array of seismic detection means, symmetric about said well, substantially at the starting level of said well;
(c) generating discrete seismic pulses with said seismic pulse generator means at a selected depth in said well;
(d) sensing a reflected and a refracted portion of said discrete seismic pulses with said seismic detection means, and converting said sensed reflected and refracted portions of said discrete seismic pulses into first recorded data;
(e) reducing said first recorded data to obtain first reflection based interval velocity data from said discrete pulses reflected by subsurface structures below said selected depth; and
(f) with said seismic pulse generator means at each of a plurality of subsequent selected depths in said well, further comprising the steps of:
(i) generating discrete seismic pulses;
(ii) sensing reflected and refracted portions of said generated discrete seismic pulses with said seismic detection means and converting said sensed reflected and refracted portions of said discrete seismic pulses into present recorded data;



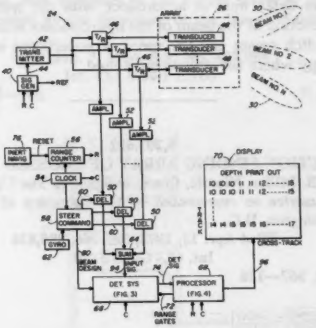
(iii) reducing said present recorded data to obtain present refraction based interval velocity data from portions of said discrete pulses refracted by subsurface structures at and above said present selected depth, and to obtain present reflection based interval velocity data from portions of said discrete pulses reflected by subsurface structures below said present selected depth;
(iv) comparing said present refraction based interval velocity data with reflection based interval velocity data previously obtained, when said seismic pulse generator means was at previous higher selected depths, from portions of said discrete pulses reflected from said subsurface structures at and above said present selected depth;
(v) determining correction factors for said previously obtained reflection based interval velocity data based on said comparing with said present refraction based interval velocity data;
(vi) applying said correction factors to correct said present reflection based interval velocity data; and
(vii) interpreting the subsurface structures at, above and below said present selected depth based on said present refraction based interval velocity data and said corrected present reflection based interval velocity data.

4,207,620

OCEANOGRAPHIC MAPPING SYSTEM

Salvatore D. Morgera, Warwick, R.I., assignor to Raytheon Company, Lexington, Mass.

Filed Sep. 26, 1974, Ser. No. 509,624
Int. Cl.[2] G01S *9/68, 7/60*
U.S. Cl. 367—88 **37 Claims**



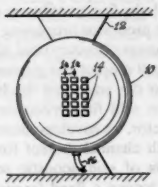
1. An oceanographic mapping system comprising: means coupled to a medum for receiving radiant energy which propagates through said medium from points of a reflective interface;
means coupled to said receiving means for segregating signals of said radiant energy as a function of the positions of said interface points relative to said receiving means;
means coupled to said segregating means for comparing points of the envelopes of said segregated signals with a set of reference points, said comparing means including reference means for providing signals representing said set of reference points; and
means coupled to said comparing means for providing a map of said interface points.

4,207,621

ELECTRICALLY STEERABLE SONAR SYSTEM

Walter L. Clearwaters, Waterford, and Lloyd T. Einstein, New London, both of Conn., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 31, 1963, Ser. No. 320,580
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—122 **3 Claims**



1. An underwater acoustic listening equipment for use in selectively establishing one of a number of narrow angle listening beams having good signal to noise ratio comprising:
a spherical framework,
several hundred identical hydrophones fixedly secured to the framework in approximately uniformly distributed relationship and identically oriented with respect to and equidistant from the center of the framework,
acoustic and vibration shielding between said hydrophones and said framework to substantially block acoustic energy from reaching each hydrophone from a reverse direction,

means for summing signals from a plurality of the hydrophones,

a delay line for each hydrophone,

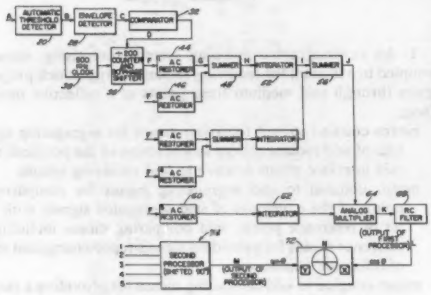
beam selecting switch means for coupling the signals from a group of the hydrophones supported on a substantial area of the spherical framework symmetrical about the line of direction of the desired beam and delayed by the respective delay lines in accordance with the spacing in the direction of the beam of the hydrophones selected by the switch means and the speed of waterborne acoustic energy where the equipment is used.

4,207,622

DIRECTION-FINDING ARRAY OF CROSSED DIPOLES

Harry B. Miller, Niantic, Conn., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 13, 1978, Ser. No. 895,838
Int. Cl.[2] G01S *3/80*
U.S. Cl. 367—126 **9 Claims**



1. A direction-finding array system for obtaining bearing angle information of an acoustic source generating acoustic signals which comprises:

a crossed dipole array including a first pair of transducers forming a first dipole having a first dipole length and a second pair of transducers forming a second dipole having a second dipole length and a fifth transducer being located at the intersection of the line joining the transducers of said first dipole and the line joining the transducers of said second dipole;

a first processor having five channels with one-to-one correspondence with the five transducers of said crossed dipole array, said first processor processing the output of each of the five transducers of said crossed dipole array in a corresponding channel thereof and generating an output signal proportional to the cosine of the bearing angle of said acoustic source; said first processor further including a threshold detector, an envelope detector, and a divide-by counter in each channel thereof for obtaining from the acoustic signals of said acoustic source corresponding output signals having a fixed frequency higher than the frequencies of the acoustic signals in each channel thereof;

a second processor having five channels with one-to-one correspondence with the five transducers of said crossed dipole array, said second processor processing the output of each of the five transducers of said crossed dipole array in a corresponding channel thereof and generating an output signal proportional to the sine of the bearing angle of said acoustic source; and

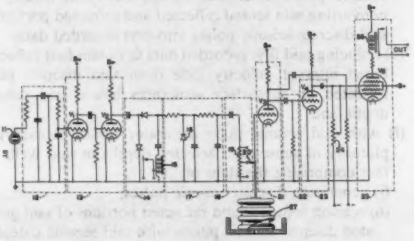
displaying means for simultaneous displaying of the outputs of said first and second processors to obtain the bearing angle information of said acoustic source.

4,207,623

ACOUSTIC MINE MECHANISM

Lloyd D. Anderson, Takoma Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 8, 1955, Ser. No. 87,001
Int. Cl.[2] F42B *22/04*; H04B *11/00*
U.S. Cl. 367—133 **9 Claims**



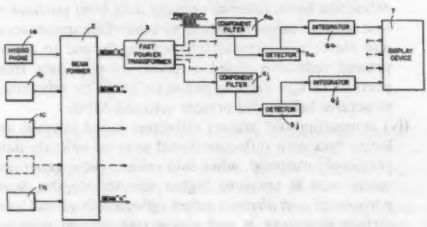
1. A system for providing an improved triggering function for firing of a mine from the acoustic signature of a ship passing thereover or in the vicinity thereto comprising means for detecting the envelope of a portion of the audio signature spectrum of the ship, means for deriving a signal corresponding to the logarithm of said detected envelope signal, means responsive to said logarithm signal for providing a signal representative of the first time derivative thereof, means for subsequently obtaining a signal simulating the second time derivative of said logarithmic signal, means for inverting the phase of said second time derivative signal, means for providing a multiplication of said first and second time derivative signals, and means responsive to said multiplied signals for actuation of a mine detonating circuit.

4,207,624

FREQUENCY DOMAIN ADAPTIVE FILTER FOR DETECTION OF SONAR SIGNALS

Mauro J. Dentino, Placentia; Harry M. Huey, Anaheim, and Toni Letendre, Placentia, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 2, 1978, Ser. No. 948,175
Int. Cl.[2] H04B *1/10*
U.S. Cl. 367—135 **6 Claims**



1. A system for processing received sonar signals comprising:

receiving and beamforming means for receiving the sonar signals and for converting the received sonar signals into digital data,

transformer means for transforming the digital data from the time domain which transformer means is connected to the output of the receiving and beam forming means,

a plurality of component filter means forming an adaptive filter for adaptively filtering the data in the frequency

domain, connected to the output of the transformer means,

a plurality of detector means for obtaining the absolute magnitude of each of the outputs of the component filter means,

a plurality of integrator means for integrating the outputs of each of the detector means, and

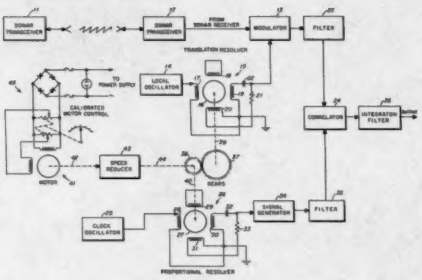
displayer means connected to the outputs of the integrator means for displaying the processed data.

4,207,625

DOPPLER COMPENSATOR FOR HETERODYNE CORRELATION DEVICES

William E. Klund, San Diego, Calif.; Woodrow H. Littrell, late of San Diego, Calif. (by Nomah M. Littrell, executrix), and Robert D. Isaak, San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 6, 1961, Ser. No. 93,814
Int. Cl.² G01S 9/66
U.S. Cl. 367—135 **9 Claims**



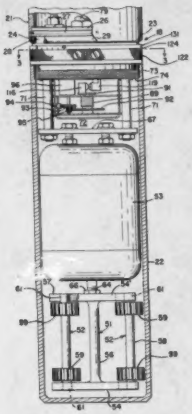
2. In a sonar communication system, a transceiver for receiving doppler signals, a local oscillator for producing a first output signal of given frequency, a translation resolver connected to said local oscillator for regulating said first output signal, a modulator connected to said transceiver and said translation resolver for mixing said received doppler signals and said regulated first output signal, a filter coupled to said modulator for filtering said mixed signals, a precision clock oscillator adapted for producing a second output signal, a proportional resolver electrically coupled to said precision clock oscillator for regulating the frequency of said second output signal, a signal generator connected to said proportional resolver and driven by said regulated second output signal for generating a third output signal, a filter coupled to said signal generator for filtering said third output signal, a correlator electrically coupled to the outputs of said mixed signal filter and said third output signal filter for correlation thereof, a drive motor, means connected to said drive motor for regulating the speed and rotation thereof, and gear means interconnecting said drive motor and said translation and proportional resolvers for driving same at a predetermined speed ratio.

4,207,626

ACOUSTIC DECOY AND JAMMER

Leon E. Wedding, Washington, D.C., and William H. Gilbert, Hyattsville, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 7, 1954, Ser. No. 435,098
Int. Cl.² H04B 11/00
U.S. Cl. 367—142 **7 Claims**



1. In an expendable acoustic apparatus adapted to operate underwater as a decoy and having an electrically driven noisemaker operative to generate sound waves of large amplitude over a broad band of frequencies, said noisemaker comprising a driving electrical drive means, a sea battery, energizing means for said drive means connecting said drive means and said battery, said energizing means including a time delay means for delayed energization of said drive means, said time delay means comprising a manually adjustable contact arm having an electrical contact thereon, a second contact arm having a second electrical contact, a driven gear train connected to said second contact arm and operative to rotate said second contact into engagement with said first contact, a latching means releasably holding said gear train from operation, said latching means including a latch biased out of engagement with said gear train and a fuse wire, said fuse wire being secured to said latch to maintain said latch in engagement with said gear train in a manner such that melting of the fuse wire disengages the latch to release the gear train for closing said contacts, and connections from said sea battery to said fuse wire.

DESIGN PATENTS

GRANTED JUN. 10, 1980

ERRATA

For CLASS	See PATENT NO.
D03–030	255,282
D26–105	255,390
D26–051	255,391

DESIGN PATENTS

GRANTED JUNE 16, 1970

ERRATA

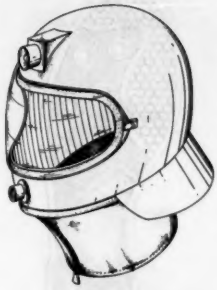
Cl.	
ISSUE	PATENT NO.
[267–139]	212,582
[129–102]	212,570
[129–101]	212,571

255,280
CONFECTION
Kirk D. Anderson, 315 E. Division St., Eagle River, Wis. 54521
Filed Dec. 14, 1977, Ser. No. 861,023
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—18

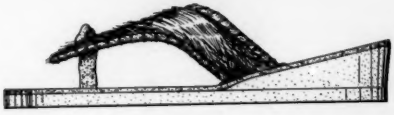
255,281
KNEELING BOARD FOR CONCRETE FINISHERS
Mark J. Breitenstine, 3097 Chenoweth Rd., Akron, Ohio 44312
Filed Sep. 30, 1977, Ser. No. 838,254
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—27

255,282
CARRYING AND STORAGE CASE FOR A TYPEWRITER OR THE LIKE
Warren E. Leavitt, 2327 S. Otis, Santa Ana, Calif. 92704
Filed Jun. 5, 1978, Ser. No. 912,562
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—30

255,283
FIREMAN'S HELMET
Simon Piche, 535 Fatima St., Les Saules, Quebec, Canada (G1P 2E2)
Filed Jun. 7, 1978, Ser. No. 913,450
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—232

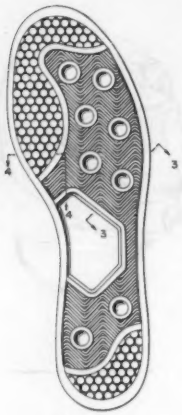


255,284
THONG SHOE
Craig Clymore, 23161 Vista Way, El Toro, Calif. 92630
Filed Feb. 2, 1978, Ser. No. 874,547
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—270

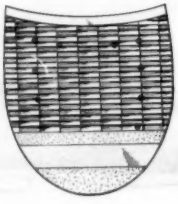


255,285
SHOE
Craig Clymore, 23161 Vista Way, El Toro, Calif. 92630
Filed Feb. 2, 1978, Ser. No. 874,549
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—313

255,286
SOLE
Shoshilo Fuzita, Kurume, Japan, assignor to Nippon Rubber Co., Ltd., Tokyo, Japan
Filed Jun. 23, 1978, Ser. No. 918,457
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



255,287
SHOE HEEL
Robert E. Russell, Holden, Mass., assignor to Quabaug Rubber Company, North Brookfield, Mass.
Filed Jul. 10, 1978, Ser. No. 923,469
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—323



255,288
CANE
Morton I. Thomas, Nyack, N.Y., assignor to Temco Products, Inc., Passaic, N.J.
Filed Dec. 30, 1977, Ser. No. 866,407
Term of patent 14 years
Int. Cl. D3—*03*
U.S. Cl. D3—9

255,289
COMBINED HOLDER AND ORGANIZER FOR THREAD OR THE LIKE
Ann S. Eubanks, and Celeste M. Steinkraus, both of Chattanooga, Tenn., assignors to Flossie, Inc., Chattanooga, Tenn.
Filed Feb. 21, 1978, Ser. No. 879,665
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D3—23

255,290

GOLF BAG CLUB SEPARATOR

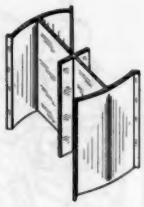
David E. Zopf, 2216 Marilyn Plz., Lansing, Mich. 48910

Filed Mar. 2, 1978, Ser. No. 882,962

Term of patent 14 years

Int. Cl. D3—*99*

U.S. Cl. D3—37



255,291

REMOVABLE POCKETBOOK FLAP ASSEMBLY

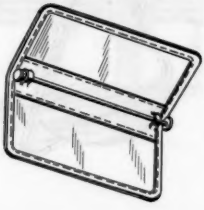
Antonia V. Miner, and Paul L. Miner, both of Londonderry, Vt., assignors to Toni-Totes of Vermont, Inc., South Londonderry, Vt.

Filed Oct. 8, 1976, Ser. No. 730,852

Term of patent 14 years

Int. Cl. D3—*01*

U.S. Cl. D3—54



255,292

AUTOMOBILE WHEEL DISPLAY STAND

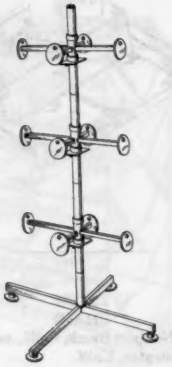
John Gibson, Long Island, N.Y., assignor to Central States Diversified, Inc., New York, N.Y.

Filed May 12, 1978, Ser. No. 905,238

Term of patent 14 years

Int. Cl. D20—*02*

U.S. Cl. D6—24



255,293

CHAIR OR SIMILAR ARTICLE

Hermann Locher, Pfeffingen, Switzerland, assignor to Giroflex Entwicklungs AG, Koblenz, Switzerland

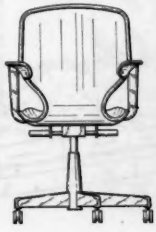
Filed Dec. 12, 1977, Ser. No. 859,990

Claims priority, application Hague, Jul. 15, 1977, 65375/77

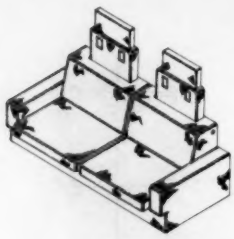
Term of patent 14 years

Int. Cl. D6—*01*

U.S. Cl. D6—31

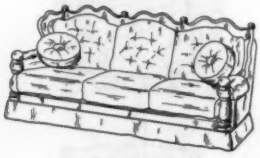


255,294
COMBINED AIRCRAFT SEAT AND RETRACTABLE HEADREST UNIT OR THE LIKE
Walter L. Cook, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Dec. 27, 1977, Ser. No. 864,567
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48



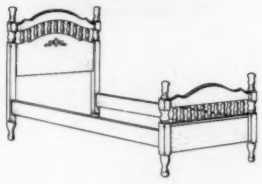
255,295
CHAIR
Robert K. Thorpe, Newport Beach, Calif., assignor to The Charlton Company, Compton, Calif.
Filed Dec. 27, 1977, Ser. No. 864,218
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—57

255,296
SEAT
David Williams, Englewood, N.J., assignor to Schweiger Industries, Inc., Jefferson, Wis.
Filed Dec. 19, 1977, Ser. No. 861,659
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—62



255,297
CHAIR OR SIMILAR ARTICLE
Richard L. Miller, R.R. #2, Petersburg, Ill. 62675
Division of Ser. No. 657,102, Feb. 10, 1976, Pat. No. Des. 248,254. This application Sep. 19, 1978, Ser. No. 932,396
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—74

255,298
BED
Haywood L. West, County of Guilford, N.C., assignor to Burlington House Furniture Division of Burlington Industries, Inc., Lexington, N.C.
Filed Jul. 18, 1977, Ser. No. 816,299
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—82



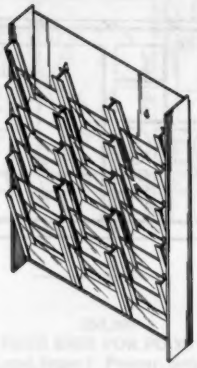
255,299
HANGING SHELF
Richard F. Laurenzi, 620 Vanderbilt Ave., Brooklyn, N.Y. 11238
Filed Jan. 20, 1978, Ser. No. 871,023
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—113

255,300

DISPLAY RACK

Jerome Charles, Rockaway, N.J., assignor to Dell Industries Inc., Clifton, N.J.

Filed Mar. 20, 1978, Ser. No. 888,078
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—130

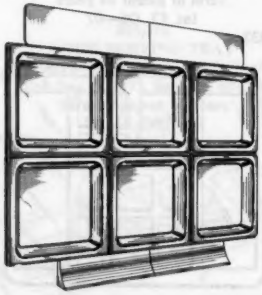


255,301

SHADOW BOX FOR DISPLAYS

Robert E. Windisch, 28652 Acacia Glenn, Agoura, Calif. 91301, and George R. Hartz, 8131 McNulty Ave., Canoga Park, Calif. 91306

Filed Jun. 14, 1977, Ser. No. 806,590
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—139

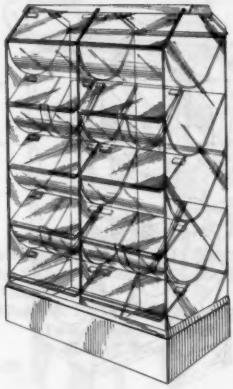


255,302

COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING CABINET FOR FOOD PRODUCTS

Hamilton S. Newsom, Jr., Hinsdale, and Vincent Battista, Elmhurst, both of Ill., assignors to Midwest Nut & Seed Company, Inc., Chicago, Ill.

Filed Feb. 13, 1978, Ser. No. 877,407
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—157

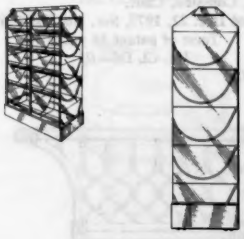


255,303

COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING STAND FOR FOOD PRODUCTS

Hamilton S. Newsom, Jr., Hinsdale, and Vincent Battista, Elmhurst, both of Ill., assignors to Midwest Nut & Seed Company, Inc., Chicago, Ill.

Filed Feb. 13, 1978, Ser. No. 877,429
Term of patent 14 years
Int. Cl. D20—*02*; D6—*04*
U.S. Cl. D6—157



255,304

COMBINED DISPLAY AND SELF-SERVICE MERCHANDISING CABINET FOR FOOD PRODUCTS

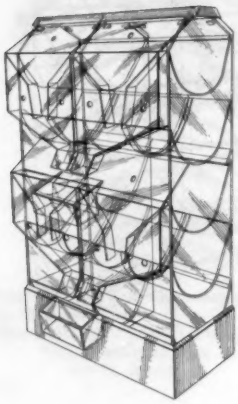
Hamilton S. Newsom, Jr., Hinsdale, and Vincent Battista, Elmhurst, both of Ill., assignors to Midwest Nut & Seed Company, Inc., Chicago, Ill.

Filed Feb. 13, 1978, Ser. No. 877,430

Term of patent 14 years

Int. Cl. D20—*02;* D6—*04*

U.S. Cl. D6—157



255,305

TABLE

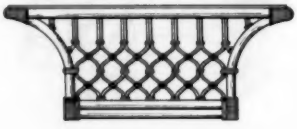
Robert K. Thorpe, Newport Beach, Calif., assignor to The Charlton Company, Compton, Calif.

Filed Dec. 22, 1977, Ser. No. 863,476

Term of patent 14 years

Int. Cl. D6—*03*

U.S. Cl. D6—175



255,306

COMBINED PHOTOGRAPH FRAME AND BULLETIN BOARD

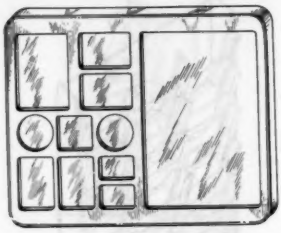
Eric Jacoby, Ocean Bluff, and Peter Blackman, East Bridgewater, both of Mass., assignors to Charles D. Burnes Co., Inc., Boston, Mass.

Filed Feb. 17, 1978, Ser. No. 878,582

Term of patent 14 years

Int. Cl. D6—*07*

U.S. Cl. D6—233



255,307

COMBINED PHOTOGRAPH FRAME AND BULLETIN BOARD

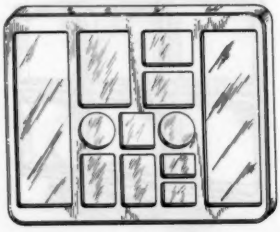
Eric Jacoby, Ocean Bluff, and Peter Blackman, East Bridgewater, both of Mass., assignors to Charles D. Burnes Co., Inc., Boston, Mass.

Filed Feb. 17, 1978, Ser. No. 878,584

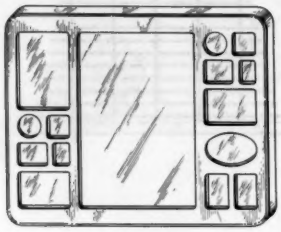
Term of patent 14 years

Int. Cl. D6—*07*

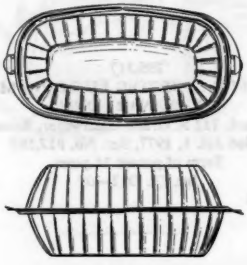
U.S. Cl. D6—233



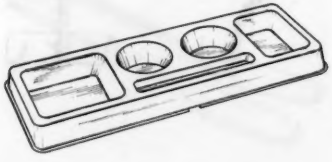
255,308
COMBINED PHOTOGRAPH FRAME AND BULLETIN BOARD
Eric Jacoby, Ocean Bluff, and Peter Blackman, East Bridgewater, both of Mass., assignors to Charles D. Burnes Co., Inc., Boston, Mass.
Filed Feb. 17, 1978, Ser. No. 878,585
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—233



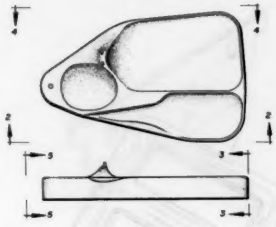
255,309
COVERED DISH FOR FOOD ITEMS
Albert E. Colato, and James F. Pomroy, both of St. Paul, Minn., assignors to Plastics, Inc., St. Paul, Minn.
Filed Jun. 30, 1978, Ser. No. 920,976
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—16



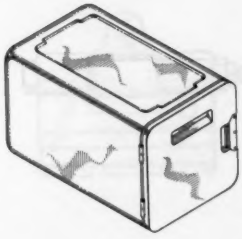
255,310
FOOD SERVING TRAY
Richard H. H. Spencer, 3131 Turtle Creek, Dallas, Tex. 75219
Filed Dec. 5, 1977, Ser. No. 857,799
Term of patent 14 years
Int. Cl. D07—*99*
U.S. Cl. D7—38



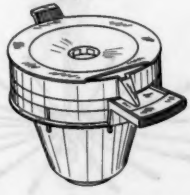
255,311
KITCHEN UTENSIL HOLDER OR THE LIKE
Carla G. Dunne, Box 6637, Chicago, Ill. 60680
Filed Feb. 1, 1978, Ser. No. 874,268
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—73



255,312
TRANSPORTABLE FOOD CONTAINER
Tim M. Uyeda, S. San Gabriel, Calif., assignor to Bloomfield Industries, Chicago, Ill.
Filed Feb. 27, 1978, Ser. No. 881,166
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—76

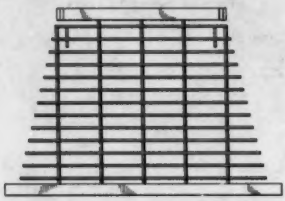


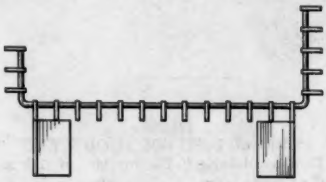
255,313
COFFEE FILTER
Marten F. Elkerbout, Peize, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Feb. 27, 1978, Ser. No. 881,878
Claims priority, application Benelux, Aug. 30, 1977, 52101-00
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—129



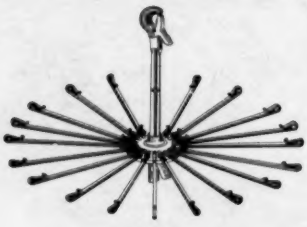
255,314
GAS BURNER
George L. Huff, Greeneville, Tenn., assignor to Metals Engineering Corporation, Greeneville, Tenn.
Filed Sep. 28, 1977, Ser. No. 837,593
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D7—136

255,316
FIREPLACE GRATE
Alvis L. Hillman, 1024 Richard St., Jacksonville, Ark. 72076
Filed Jan. 3, 1978, Ser. No. 866,716
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—207

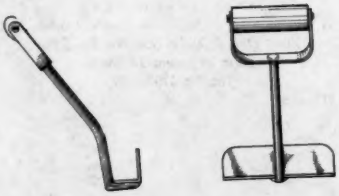




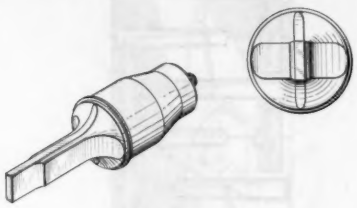
255,315
CLOTHESDRIER
Taro Koshiyama, 46, 2-chome, Minamikinomoto, Yao-shi, Osaka-fu, Japan
Filed Aug. 8, 1977, Ser. No. 822,837
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—196



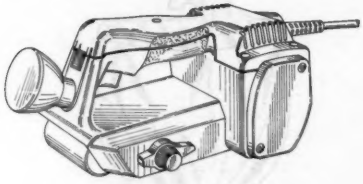
255,317
HAND TOOL FOR CARRYING BUILDING MATERIALS OF PLANAR FORM
Raymond Slinkard, 112 S. Grain, Clearwater, Kans. 67026
Filed Jul. 1, 1977, Ser. No. 812,187
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D8—14



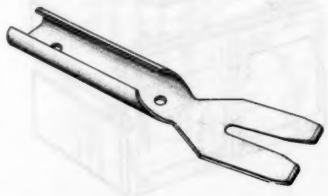
255,318
ULTRASONIC WELDING HEAD FOR POLYPROPYLENE STRAPPING
Hans A. Bakkeren, Insulindelaan 17, Hilversum, 1217 HK, Netherlands
Filed Nov. 22, 1977, Ser. No. 854,034
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—30



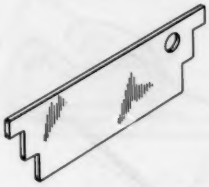
255,319
PORTABLE BELT SANDER
William H. Schultz, Northbrook, and E. Harold Lilja, Arlington Heights, both of Ill., assignors to Skil Corporation, Chicago, Ill.
Filed Jul. 14, 1977, Ser. No. 815,864
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—62



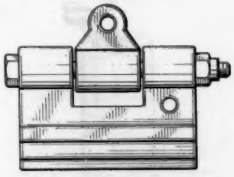
255,320
PRY TOOL FOR UPHOLSTERY REMOVAL
George L. Steck, West Carrollton, Ohio, assignor to Steck Manufacturing Co., Inc., Dayton, Ohio
Filed Sep. 26, 1977, Ser. No. 836,388
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—89



255,321
STAY FOR HOLDING A GAS PUMP NOZZLE TRIGGER IN THE OPEN POSITION
Bernard M. Stelman, 82 Main St., Wethersfield, Conn. 06109
Filed Aug. 28, 1978, Ser. No. 937,102
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—349

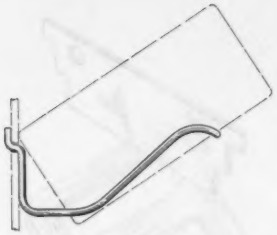


255,322
SAILBOAT GOOSENECK
Richard L. Ireland, 8182 Guilders St., Huntington Beach, Calif. 92647
Filed Sep. 6, 1977, Ser. No. 830,904
Term of patent 14 years
Int. Cl. D8—*06, 08*
U.S. Cl. D8—356

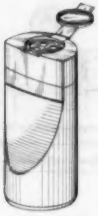


255,323
BRACKET FOR SUSPENDING ARTICLES
Aarno Palmroth, Grankulla, Finland, assignor to Viialan Viila Oy, Finland
Filed Aug. 1, 1977, Ser. No. 820,807
Term of patent 14 years
Int. Cl. D8—*08*; D6—*04*
U.S. Cl. D8—373

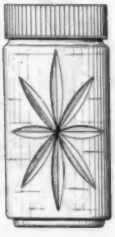
255,324
PEGBOARD BRACKET FOR HOLDING CYLINDRICAL RECEPTICLES
Charles Pierce, Hurricane Harbour, Marathon, Fla. 33050
Filed Jan. 6, 1978, Ser. No. 867,375
Term of patent 7 years
Int. Cl. D8—*08*
U.S. Cl. D8—380



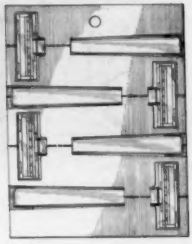
255,325
DISPENSING CONTAINER
Earl Hoyt, Ramsey, N.J., assignor to Airwick Industries, Inc., Carlstadt, N.J.
Filed Oct. 13, 1977, Ser. No. 841,640
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—83



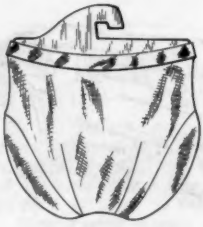
255,326
JAR AND CLOSURE
Floyd E. Pettengill, Lancaster, Ohio, assignor to General Foods Corporation, White Plains, N.Y.
Filed Feb. 21, 1978, Ser. No. 879,660
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—164



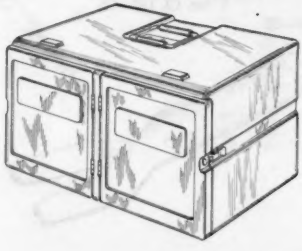
255,327
RAZOR PACKAGE
Rolf A. Samsing, Braintree, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jan. 12, 1978, Ser. No. 868,843
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—186



255,328
PANTYHOSE PACKAGE
Barry G. Carroll, Burlington, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.
Continuation-in-part of Ser. No. 674,746. Apr. 7, 1976, Des. Pat. No. 247,223. This application Jul. 13, 1977, Ser. No. 815,357
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—191



255,329
FOOD TRANSPORT CONTAINER
Thomas J. Luck, George Lamb Rd., Leyden, Mass. 01337
Filed Sep. 12, 1977, Ser. No. 832,424
Term of patent 14 years
Int. Cl. D9—*04*
U.S. Cl. D9—246

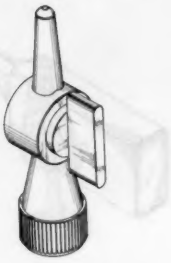


255,330

DISPENSING CAP FOR BOTTLE OR THE LIKE

Frank E. Brown, 1741 Camino De Villas, Burbank, Calif. 91501

Filed Dec. 7, 1977, Ser. No. 858,420
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—265

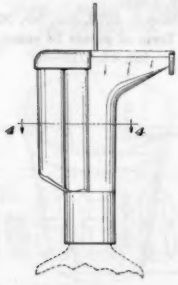


255,331

VARIABLE VOLUME LIQUID DISPENSING CLOSURE

Gary Van Montgomery, Midland, Mich., and Gary Van Montgomery, Evansville, Ind., assignors to The Dow Chemical Company, Midland, Mich.

Filed Apr. 14, 1977, Ser. No. 787,397
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—275



255,332

COMBINED HOOK AND HANDLE FOR A BAG

Gerard M. DuCorday, 10871 Thorley Rd., Santa Ana, Calif. 92705

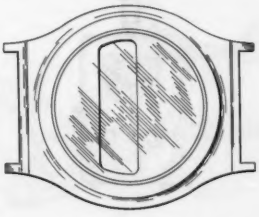
Filed Jan. 4, 1978, Ser. No. 866,924
Term of patent 14 years
Int. Cl. D09—*99*
U.S. Cl. D9—292

255,333

WRIST WATCH

Eugene J. Sulek, Lubbock, Tex., and Walter S. Nakano, Burbank, Calif., assignors to Texas Instruments Incorporated, Dallas, Tex.

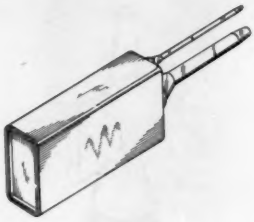
Filed Dec. 12, 1977, Ser. No. 859,886
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—38



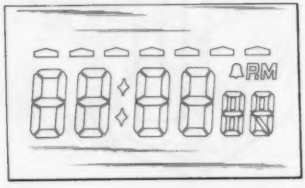
255,334
SOIL MOISTURE SOIL INDICATOR
Bernard T. Corbin, and Douglas D. Miller, both of Atlanta, Ga., assignors to Compac Industries, Inc., Atlanta, Ga.
Filed Sep. 6, 1977, Ser. No. 830,647
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56

255,335
ELECTRONIC WET BULB GLOBE TEMPERATURE METER
C. Wayne Joslin, Cambridge, Canada; John C. Kroon, Chagrin Falls; Frederick L. Glesius, Shaker Heights, both of Ohio, and Matthew D. Cowan, Cambridge, Canada, assignors to Reuter-Stokes, Inc., Cleveland, Ohio
Filed Feb. 22, 1978, Ser. No. 880,317
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—56

255,336
RADAR DETECTOR
Donald L. Roettele, and William E. Yohpe, both of Dayton, Ohio, assignors to ComGeneral Corporation, Dayton, Ohio
Continuation-in-part of Ser. No. 752,451, Dec. 20, 1976, Des. Pat. No. 249,777. This application May 18, 1978, Ser. No. 907,272
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—104

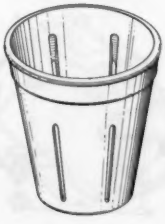


255,337
ELECTRO-OPTIC DIGITAL DISPLAY FOR A TIMEPIECE
Roland C. Pummer, Hightstown, N.J., assignor to Timex Corporation, Waterbury, Conn.
Filed May 8, 1978, Ser. No. 903,450
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—125

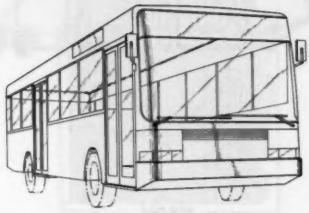


255,338
TREE SCULPTURE OR THE LIKE
Martin G. Addicott, 360 Sterling Dr., Bellingham, Wash. 98225
Continuation-in-part of Ser. No. 915,441, Jun. 14, 1978. This application Sep. 25, 1978, Ser. No. 945,187
Term of patent 14 years
Int. Cl. D11—*04*
U.S. Cl. D11—118

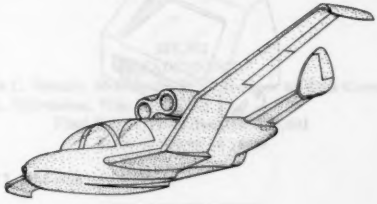
255,339
PLANT CONTAINER
Hubert E. Christian, Phoenix, Ariz., assignor to Dart Industries Inc., Los Angeles, Calif.
Filed Nov. 26, 1976, Ser. No. 745,313
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—152



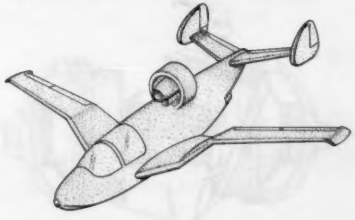
255,340
BUS BODY
Klaus Flesche, Schlangenbad, Fed. Rep. of Germany, assignor to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft, Fed. Rep. of Germany
Filed Jan. 19, 1978, Ser. No. 871,123
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 3476
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—84



255,341
AIRCRAFT
Peter Dornier, Schachenerstrasse 97, Lindau, Fed. Rep. of Germany (8990)
Filed Nov. 7, 1977, Ser. No. 849,486
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—75

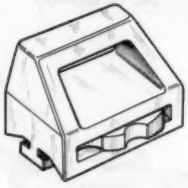


255,342
AIRCRAFT
Peter Dornier, Schachenerstrasse 97, Lindau, Fed. Rep. of Germany (8990)
Filed Nov. 7, 1977, Ser. No. 849,488
Term of patent 14 years
Int. Cl. D12—*07*
U.S. Cl. D12—75



255,343
VEHICLE TRANSPORT TRAILER
Don J. Cottrell, 2164 Hawthorne La., and Don M. Cottrell, Rte. 7, Duckett Mill Rd., both of Gainesville, Ga. 30501
Filed Jun. 29, 1978, Ser. No. 920,229
Term of patent 14 years
Int. Cl. D12—*10*
U.S. Cl. D12—94

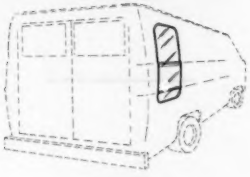
255,344
TIE-DOWN BRACKET
Charles E. Ingram, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Sep. 29, 1977, Ser. No. 837,597
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—157



255,345
TOOL BOX FOR BICYCLES
David E. Halter, 6½ Merritt St., Marblehead, Mass. 01945
Filed Jan. 13, 1978, Ser. No. 869,390
Term of patent 3½ years
Int. Cl. D12—*11*
U.S. Cl. D12—158

255,346
BRAKE BRACKET FOR BICYCLES
René Lauzier, Ruy, France, assignor to Angenieux-CLB S.A., Saint-Etienne, France
Filed Apr. 14, 1978, Ser. No. 896,630
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—179

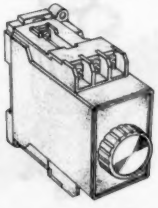
255,347
VAN WINDOW
Walter J. Longeway, 1875 S. Garfield St., Denver, Colo. 80210, and Roger D. Styes, 1835 S. Shoshone St., Denver, Colo. 80223
Filed Oct. 31, 1977, Ser. No. 847,308
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—183



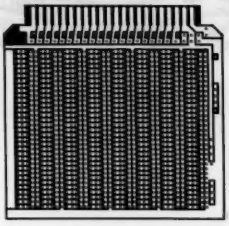
255,348
PEDAL OPERATED POWER GENERATOR
Richard E. Ott, Northampton, Pa., assignor to Rodale Resources, Inc., Emmaus, Pa.
Filed Apr. 27, 1978, Ser. No. 901,282
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—2

255,349
PEDAL OPERATED POWER GENERATOR
Harry E. Wohlbach, Allentown, and Harry McVicker, Pottstown, both of Pa., assignors to Rodale Resources, Inc., Emmaus, Pa.
Filed Feb. 12, 1979, Ser. No. 11,522
Term of patent 14 years
Int. Cl. D13—*01*
U.S. Cl. D13—2

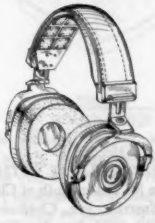
255,350
TIMING RELAY
Teizo Fujita, Ibaraki, and Syunzo Yoshida, Takatsuki, both of Japan, assignors to Izumi Denki Corporation, Osaka, Japan
Filed Oct. 4, 1977, Ser. No. 839,505
Claims priority, application Japan, Apr. 18, 1977, 52/14571; Apr. 19, 1977, 52/14754; Apr. 30, 1977, 52/16562
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—33

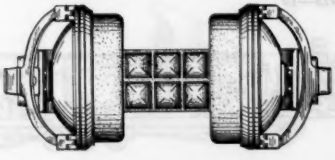


255,351
CIRCUIT BOARD
David Pettijohn, Watertown, Mass., assignor to Midgard Electronic Company, Inc., Watertown, Mass.
Filed Jun. 28, 1978, Ser. No. 920,216
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—99

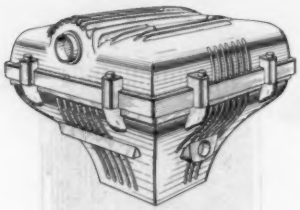


255,352
HEADPHONE
Joseph C. Bessasie, Shorewood, Wis., assignor to Koss Corporation, Milwaukee, Wis.
Filed Feb. 6, 1978, Ser. No. 875,601
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—36

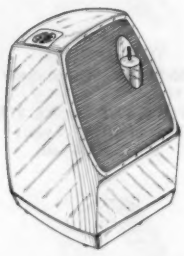




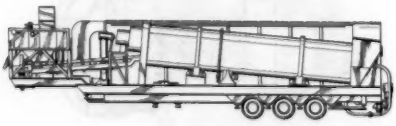
255,353
AFTER-COOLER FOR SUPERCHARGER FOR INTERNAL COMBUSTION ENGINE
Robert L. Ullrich, P.O. Box 899, Roswell, N. Mex. 88201
Filed Nov. 14, 1977, Ser. No. 851,324
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5



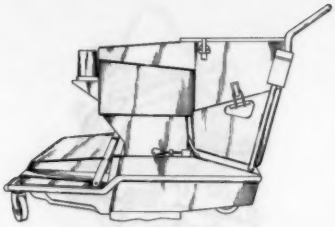
255,354
AQUARIUM PUMP HOUSING
Marvin A. Goldman, Great Neck; Jerome N. Goldman, New York, both of N.Y.; Silvio J. Di Marchi, Wychoff, N.J.; Kenneth Kaplan, Yonkers, and Arthur Gilmore, Greenlawn, both of N.Y., assignors to Penn-Plax Plastics, Inc., Garden City, N.Y.
Filed Jan. 30, 1978, Ser. No. 873,396
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—8



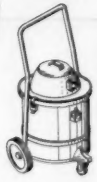
255,355
PORTABLE DRUM MIX PLANT WITH BAGHOUSE
Erbie G. Mize, and Irwin M. Riske, both of Chattanooga, Tenn., assignors to Astec Industries, Inc., Chattanooga, Tenn.
Filed Mar. 30, 1978, Ser. No. 891,945
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—19



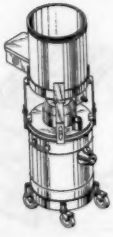
255,356
POWERED SWEEPER
Thomas S. Block, Muskegon, Mich., assignor to Clarke-Gravely Corporation, Muskegon, Mich.
Filed Sep. 6, 1977, Ser. No. 830,491
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—48



255,357
INDUSTRIAL VACUUM CLEANER
Joseph F. Brooks, and Vernon E. Flanders, both of Bloomington, Ill., assignors to National Union Electric Corporation, Greenwich, Conn.
Filed May 5, 1976, Ser. No. 683,686
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—54

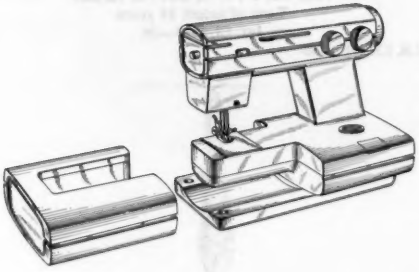


255,358
FLOOR CLEANING APPARATUS
Robert N. Bartlett, 2310 S. Holly St., Denver, Colo. 80222
Filed Jun. 6, 1977, Ser. No. 804,097
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—54

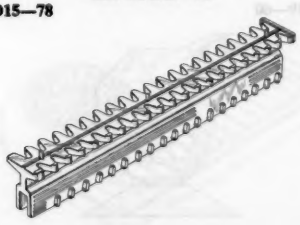


255,359
COMBINATION FLOOR CLEANING APPARATUS WAND AND FLOOR TOOL
Robert N. Bartlett, 2310 S. Holly St., Denver, Colo. 80222
Filed Jun. 6, 1977, Ser. No. 804,090
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D15—63

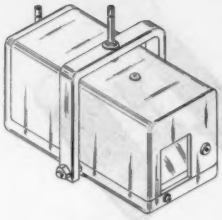
255,360
SEWING MACHINE
Masamitu Sibuya, Hachiouzi; Shigemasa Katou, Kamakura, and Masahiro Tanaka, Yokohama, all of Japan, assignors to Tokyo Juki Kogyo Kabushiki Kaisha, Chofu, Japan
Filed Sep. 1, 1978, Ser. No. 939,127
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—68



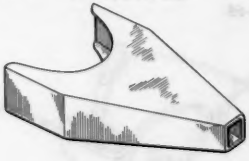
255,361
RAIL MEMBER FOR USE IN A CARPET TUFTING DEVICE
Bent J. Panker, Allerod, Denmark, assignor to Crown Crafts International, Inc., Phoenix, Ariz.
Filed Jan. 17, 1977, Ser. No. 760,232
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D15—78



255,362
SURVEILLANCE CAMERA HOUSING OR SIMILAR ARTICLE
Thomas Coleman, 1034 59th St., Oakland, Calif. 94609
Filed Dec. 19, 1977, Ser. No. 862,049
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D16—02



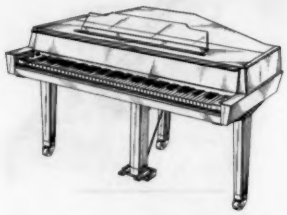
255,363
MAGNIFIER
Per A. Johansson, Malmö, Sweden, assignor to X-Produkter Johansson & Co. AB, Malmo, Sweden
Filed Jul. 1, 1977, Ser. No. 812,282
Claims priority, application Sweden, Feb. 9, 1977, 0301/77
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—54



255,364
BINOCULARS
Karl H. Lange, Bunde, Fed. Rep. of Germany, assignor to Balda-Werke Photographische Gerate und Kunststoff GmbH & Co. KG, Bunde, Fed. Rep. of Germany
Filed Feb. 15, 1978, Ser. No. 878,039
Claims priority, application Fed. Rep. of Germany, Oct. 5, 1977, 3448
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—59

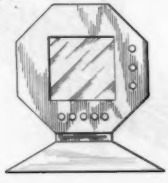
255,365
EYEGLASS FRAME
Elliot L. Kerns, New York, N.Y., assignor to Joy Optics Inc., Westbury, N.Y.
Filed May 5, 1978, Ser. No. 903,228
Term of patent 3½ years
Int. Cl. D16—*06*
U.S. Cl. D16—65

255,366
ELECTRIC PIANO, OR THE LIKE
Sadayoshi Karaki, and Nobushiro Aiba, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Japan
Filed Feb. 21, 1978, Ser. No. 879,815
Claims priority, application Japan, Aug. 24, 1977, 52-33698
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—8

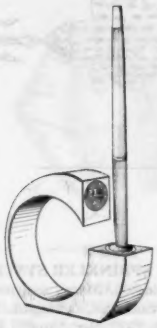


255,367
PEN NIB
Patrick E. Montague, Sylva, N.C., assignor to Glasrock Products, Inc., Fairburn, Ga.
Filed Jul. 17, 1978, Ser. No. 925,399
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55

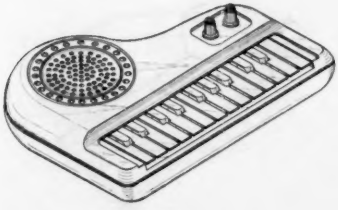
255,368
LEARNING SCREEN
Dorothy L. Boyd, 11230 S. Vernon, Chicago, Ill. 60628
Filed May 19, 1977, Ser. No. 798,595
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D19—60



255,369
DESK SET
Francois de Gross, Geneva, Switzerland, assignor to Fabrique Suisse de Crayons Caran d'Ache S.A., Geneva, Switzerland
Filed Jan. 16, 1978, Ser. No. 869,486
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—75

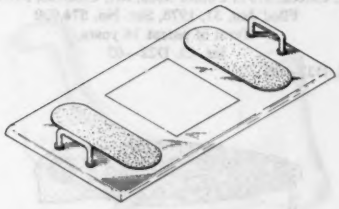


255,370
TOY PIANO
Yoshio Hayama; Humiuki Kurita, both of Sagamihara, and Sozen Uozumi, Fuchu, all of Japan, assignors to Emix Corporation, Sagamihara, Japan
Filed Oct. 31, 1977, Ser. No. 847,307
Claims priority, application Japan, Aug. 24, 1977, 52-33410
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—64



255,371
FIGURE OF AN ELF
Lois O. McAllister, 16 Green St., Cazenovia, N.Y. 13035
Filed Sep. 15, 1978, Ser. No. 942,901
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—174

255,372
EXERCISE PLATFORM
Alfred C. Tidmore, P.O. Box 18467, Seattle, Wash. 98118
Filed Jan. 19, 1978, Ser. No. 870,668
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—193



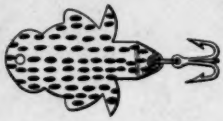
255,373
GOLF PUTTER HEAD
Karsten Solheim, 501 W. Wakonda La., Phoenix, Ariz. 85023
Filed Aug. 14, 1978, Ser. No. 933,776
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—219

255,374
CHILD'S SWING
C. Fletcher Smith, 6534 Rolling Fork Dr., Nashville, Tenn. 37205, and Herbert Piercey, Jr., 112 Castaway Ct., Nashville, Tenn. 37214
Filed Apr. 5, 1978, Ser. No. 893,563
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—246

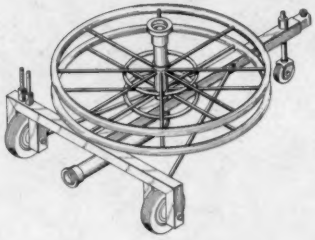
255,375
FISHING LURE
John V. Caleca, 37971 Pointe Rosa, Mt. Clemens, Mich. 48045
Filed Jan. 31, 1978, Ser. No. 874,020
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—28

255,376
FROG-LIKE FISH LURE
William E. Hogreff, 295 D St., Apt. B, Chula Vista, Calif. 92010
Filed Sep. 8, 1978, Ser. No. 940,876
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

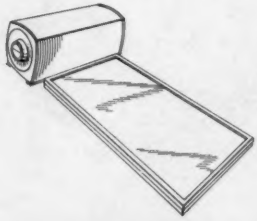
255,377
POLLYWOG FISH LURE
William E. Hogreff, 295 D St., Apt. B., Chula Vista, Calif. 92010
Filed Nov. 13, 1978, Ser. No. 960,292
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29



255,378
BASE FOR SPRINKLER SYSTEM
Philip L. Tropeano, Lexington, Mass., assignor to Larchmont Engineering and Irrigation, Inc., Lexington, Mass.
Filed Dec. 5, 1977, Ser. No. 857,877
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—7



255,379
SOLAR WATER HEATING UNIT
Harry J. Riley, Perth, Australia, assignor to S. W. Hart & Co., Australia
Filed Oct. 12, 1977, Ser. No. 841,635
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127

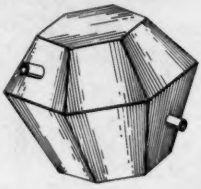


255,380

HEMODIALYSIS RESERVOIR OR THE LIKE

Jacques M. Calzia, Saint-Genis Laval, and André Sausse, Sceaux, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Apr. 26, 1977, Ser. No. 791,163
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—21

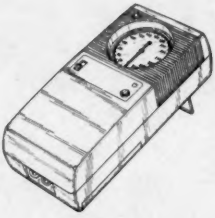


255,381

BLOOD PRESSURE MEASURING DEVICE

Helmut Schmidt, Mannheim, Fed. Rep. of Germany, assignor to Labora Mannheim GmbH für Labortechnik, Mannheim, Fed. Rep. of Germany

Filed Dec. 30, 1977, Ser. No. 866,201
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1977, 1123
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—21

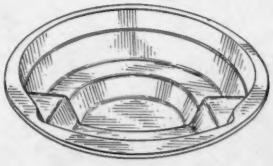


255,382

HYDROTHERAPY TUB

Gary G. Beebe, 13018 Lakeview Granada, Lakeside, Calif. 92040, and Glen L. Peterson, 10981 Baroque La., San Diego, Calif. 92124

Filed Mar. 20, 1978, Ser. No. 888,676
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D24—38

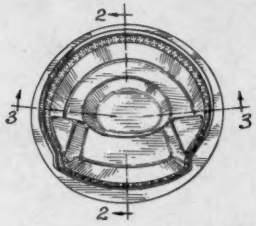


255,383

HYDROTHERAPY TUB

Gary G. Beebe, 13018 Lakeview Granada, Lakeside, Calif. 92040, and Glen L. Peterson, 10981 Baroque La., San Diego, Calif. 92124

Filed Mar. 28, 1978, Ser. No. 891,158
Term of patent 14 years
Int. Cl. D24—*01;* D23—*02*
U.S. Cl. D24—38

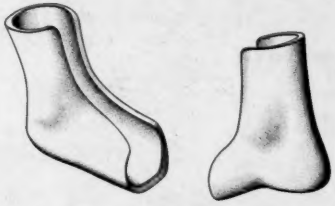


255,384

ANKLE ZONE IMMOBILIZER

Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125

Filed Mar. 20, 1978, Ser. No. 890,699
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64

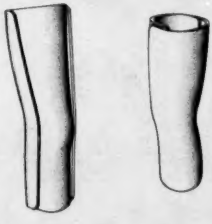


255,385

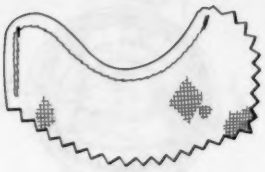
LEG AND KNEE ZONE IMMOBILIZER

Alan Finnieston, 1901 NW. 17th Ave., Miami, Fla. 33125

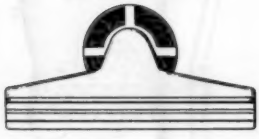
Filed Apr. 4, 1978, Ser. No. 893,606
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—64



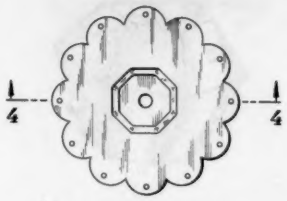
255,386
BEAUTY MASK CHEEK PAD
Janet L. Gallagher, 1295 Loma Linda Ave., Mound, Minn. 55364
Filed Apr. 15, 1977, Ser. No. 787,895
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—9



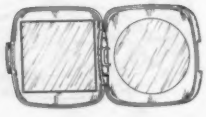
255,387
RAZOR HANDLE
Martin Glaberson, Stratford, Conn., assignor to Wilkinson Sword Limited, England
Filed May 16, 1978, Ser. No. 906,313
Claims priority, application United Kingdom, Nov. 26, 1977, 982407/77
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48



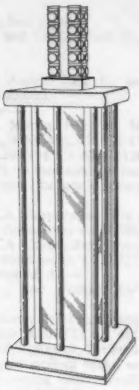
255,388
COMBINATION FLOSS HOLDER, KEY CHAIN FOB AND DENTAL APPOINTMENT REMINDER
David V. Olson, 324 IDS Tower, Minneapolis, Minn. 55402
Filed Feb. 23, 1978, Ser. No. 881,078
Term of patent 14 years
Int. Cl. D24—*99;* D03—*01*
U.S. Cl. D28—64



255,389
ILLUMINATED COMPACT
Raymond Boyd, 2235 Cambridge Rd., Broomall, Pa. 19008
Filed Aug. 13, 1979, Ser. No. 65,884
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D28—78



255,390
LAMP OR SIMILAR ARTICLE
Glen F. Morrison, 2555 Lakewood, Detroit, Mich. 48215
Filed Nov. 14, 1977, Ser. No. 851,463
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—105



255,391
FOUNTAIN LAMP
Mario Rosero, 1341 W. Foster Ave., Chicago, Ill. 60640
Filed Aug. 21, 1978, Ser. No. 935,325
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—51

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JUNE, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Lunsford, Carl D.; and Cale, Albert D., Jr., 4,207,327, Cl. 424-273.00P.

AB Kabi: *See—*
Claeson, Karl G.; Aurell, Leif E.; and Simonsson, Leif R., 4,207,232, Cl. 435-23.000.

Abbott Laboratories: *See—*
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,207,415, Cl. 536-17.00R.
Collum, Paulette, 4,207,314, Cl. 424-181.000.

Aboelfotoh, Mohamed O., to International Business Machines Corporation. Dielectric overcoat for gas discharge panel. 4,207,488, Cl. 313-221.000.

Abt, Richard F., to RCA Corporation. Pre-processing apparatus for FM stereo overshoot elimination. 4,207,526, Cl. 455-110.000.

Abt, Richard F., to RCA Corporation. Pre-processing apparatus for FM stereo overshoot elimination. 4,207,527, Cl. 455-110.000.

ACF Industries, Incorporated: *See—*
Jantzen, Steven L.; and Rollins, Dallas W., 4,206,709, Cl. 105-243.000.

Acker, William F., to Honeywell Inc. Digital channel on-line pseudo error dispersion monitor. 4,207,523, Cl. 375-17.000.

Ackermann, Werner; and Vollhardt, Frohmut, to SAG Siegener AG. Device for heating open melting baths, such as galvanizing baths, enameling baths, lead coating baths, metallic baths, glass baths, and the like. 4,207,065, Cl. 432-195.000.

Actus, Inc.: *See—*
Durenec, Peter, 4,206,609, Cl. 62-6.000.

Adachi, Takeshi; Koike, Masahiko; and Suzuki, Haruyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with sequencer for automatic arpeggio performance. 4,206,676, Cl. 84-1.030.

Adamiak, Zigmunt P.: *See—*
Porter, Maxwell R.; Sciffer, Jack P.; Adamiak, Zigmunt P.; and Dim, Alexander, 4,207,362, Cl. 427-367.000.

Adams, Frederick J., to Cam Gears Limited. Steering gears. 4,206,827, Cl. 180-132.000.

Adelhardt, Georg; Buettner, Karl; Feichtner, Walter; Hasselberg, Herbert; and Voelkel, Andreas, to Kabel-und Metallwerke Gutehoffnungshuette AG. Coil unwinding device. 4,206,889, Cl. 242-128.000.

Aerojet-General Corporation: *See—*
Reynolds, Clifton J.; and Shultz, Ralph H., Jr., 4,207,025, Cl. 415-200.000.

Agence Nationale de Valorisation de la Recherche (ANVAR): *See—*
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, 4,207,489, Cl. 313-363.000.

Aikawa, Kiyoshi: *See—*
Kumagai, Kiyoshi; Awamura, Toshio; Aikawa, Kiyoshi; and Tatematsu, Tatsuo, 4,206,944, Cl. 296-76.000.

Air Preheater Company, Inc., The: *See—*
Finnemore, Harlan E.; and Baker, Roderick J., 4,206,803, Cl. 165-9.000.

Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, to Tokyo Shibaura Electric Co., Ltd. Bimetal and method for manufacturing the same. 4,207,381, Cl. 428-619.000.

Aisan Industry Co., Ltd.: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.

Ajinomoto Co. Ltd.: *See—*
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.

Aktiebolaget SKF: *See—*
Bergman, Per, 4,206,548, Cl. 33-174.00E.

Akzona Incorporated: *See—*
Heyboer, Nico, 4,207,251, Cl. 260-453.00P.

Albany International Corp.: *See—*
Coplan, Myron J.; Burchesky, Robert D.; and Sebring, Robert E., 4,207,192, Cl. 210-321.00R.

Albert Rolland S.A.: *See—*
Thuillier, Germaine; Laforest, Jacqueline; and Bessin, Pierre, 4,207,319, Cl. 424-248.510.

Albini, Italo: *See—*
Guainazzi, Giancarlo; and Albini, Italo, 4,207,217, Cl. 260-18.00N.

Alcan Research and Development Limited: *See—*
O'Dette, John H.; and Jack, Stanton E., 4,207,099, Cl. 75-251.000.

Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., to McDonnell Douglas Corporation. Process and apparatus for analyzing specimens for the presence of microorganisms therein. 4,207,394, Cl. 435-34.000.

Alexeeva, Olga V.: *See—*
Danjushevskaya, Natalia E.; Alexeeva, Olga V.; Pogostkina, Bella G.; Kovalenko, Valentina M.; and Mironova, Zinaida A., 4,207,301, Cl. 423-305.000.

Alfa-Laval AB: *See—*
Nilsson, Vilgot R., 4,206,871, Cl. 233-19.00R.

Alford, Andrew. Means for reducing re-radiation from tall guyed towers located in a strong field of a directional AM radio station. 4,207,575, Cl. 343-874.000.

Alford, Andrew. Means for reducing re-radiation from tall guyed towers located in a strong field of a directional AM radio station. 4,207,576, Cl. 343-885.000.

Alford, David W.: *See—*
Jenkins, Harry L.; Smelser, Gene C.; and Alford, David W., 4,207,254, Cl. 260-508.000.

Allbritton, Harold L. Ice producing apparatus. 4,206,614, Cl. 62-233.000.

Allen & Hanburys Limited: *See—*
Hallworth, Gerald W.; and Clough, David, 4,206,758, Cl. 128-203.150.

Allen, Susan M.: *See—*
Barry, Brian; Artt, David W.; and Allen, Susan M., 4,207,027, Cl. 416-96.00R.

Allied Chemical Corporation: *See—*
Diamond, Steven E.; Mares, Frank; and Tovrog, Benjamin S., 4,207,305, Cl. 423-573.00R.
Segal, Leon, 4,207,373, Cl. 428-251.000.

Altabe, Edmond. Handling hook assembly. 4,206,940, Cl. 294-82.00R.

Aluminum Company of America: *See—*
Dunn, Lloyd G.; and Pohlenz, Elmer E., 4,206,852, Cl. 215-252.000.

Amada Company, Limited: *See—*
Hirata, Tadashi; and Nakano, Takashi, 4,206,667, Cl. 83-146.000.

Amax Inc.: *See—*
Nauta, Harry H. K.; Kok, Jan W.; and Harte, Jan, 4,207,296, Cl. 423-61.000.

Amaya, Yuji; and Ito, Tatsuo, to Fujitsu Ten Limited. Radio receiver. 4,207,529, Cl. 455-158.000.

Amazawa, Kiyoshi; and Mori, Masaharu, to Clarion Co., Ltd. Noise eliminating system. 4,207,432, Cl. 179-1.0GD.

American Aerospace Controls, Inc.: *See—*
Gitlin, Robert; and Mayerhoff, Evan, 4,207,566, Cl. 340-664.000.

American Cyanamid Company: *See—*
Wang, Samuel S.; and Smith, Eugene L., Jr., 4,207,178, Cl. 209-166.000.
Wang, Samuel S.; Lewellyn, Morris E.; and Dugan, Charles, 4,207,186, Cl. 210-54.000.

American Home Products Corporation: *See—*
Kao, Wenling, 4,207,419, Cl. 560-53.000.

American Machine & Hydraulics, Inc.: *See—*
Grimaldo, Samuel, 4,206,629, Cl. 72-389.000.

American Standard Inc.: *See—*
Mahoney, Kenneth L.; and Johnson, David A., 4,206,744, Cl. 126-121.000.

American Sunroof Corporation: *See—*
Garascia, David C., 4,206,927, Cl. 277-12.000.

Ametek, Inc.: *See—*
Phillips, Harold H.; and Mollick, Milton, 4,206,643, Cl. 73-206.000.

Amino, Kyoichi: *See—*
Susaki, Akihiro; Tsuboki, Noboru; Amino, Kyoichi; and Hosoya, Minoru, 4,206,788, Cl. 141-1.000.

AMP Incorporated: *See—*
English, Keith H.; Forney, Edgar W., Jr.; and O'Keefe, Michael F., 4,206,963, Cl. 339-147.00R.
Olsson, Billy E., 4,206,964, Cl. 339-221.00M.
Shue, John L., Jr.; and Douty, George H., 4,206,962, Cl. 339-147.00R.

AMSTED Industries Incorporated: *See—*
Kaim, John W., 4,206,849, Cl. 213-151.000.

Amstutz, O. Wendell; Dickinson, William A.; and Kreidler, James F., to GTE Products Corporation. Implosion-resistant cathode ray tube and fabricating process. 4,206,534, Cl. 29-25.130.

Anderson, Bruce W. Clamping roller assembly. 4,206,716, Cl. 114-102.000.

Anderson-Cook, Inc.: *See—*
Roth, Robert G., 4,206,535, Cl. 29-90.00B.

Anderson, Eugene R., to Horizon Manufacturing Corporation. Material and method for obtaining hydrogen by dissociation of water. 4,207,095, Cl. 75-134.00N.

Anderson, John E.; and Hildenbrand, Ernest G., to Goodyear Tire & Rubber Company, The. Rearrangement of aralkyl hydroperoxides to form phenols and carbonyl compounds. 4,207,264, Cl. 568-385.000.

Anderson, Lloyd D., to United States of America, Navy. Acoustic mine mechanism. 4,207,623, Cl. 367-133.000.

Ando, Tsuneo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.

Angelo, Mario M.: *See—*
Capps, David B.; Angelo, Mario M.; and Culbertson, Townley P., 4,207,320, Cl. 424-248.560.

Ankerfarm S.p.A.: *See—*
Broggi, Renato; and Cotti, Gino, 4,207,258, Cl. 260-559.0AT.

Annen, Klaus: *See—*
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.

Anthony, John: *See—*
Lustig, Stanley; and Anthony, John, 4,207,363, Cl. 428-35.000.

Antonov, Anatoly V.: *See—*
Safonnikov, Anatoly N.; Sinchuk, Anatoly G.; and Antonov, Anatoly V., 4,207,454, Cl. 219-73.100.

Antos, George J., to UOP Inc. Hydrocarbon conversion with an acidic multimetallic catalytic composite. 4,207,170, Cl. 208-139.000.

Antos, George J., to UOP Inc. Hydrocarbon dehydrocyclization with an acidic multimetallic catalytic composite. 4,207,172, Cl. 208-139.000.

Antos, George J., to UOP Inc. Dehydrogenation method and nonacidic multimetallic catalytic composite for use therein. 4,207,425, Cl. 585-434.000.

Antos, George J.: *See—*
Flagg, John F.; and Antos, George J., 4,207,171, Cl. 208-139.000.

Appley, Robert J. Vehicle restraint system for the handicapped. 4,206,936, Cl. 280-751.000.

Arai, Sakae, to Tokyo Shibaura Electric Co., Ltd. Activated gas generator. 4,207,452, Cl. 219-10.55A.

Arai, Yoshinobu: *See—*
Hayashi, Masaki; Arai, Yoshinobu; Shimoji, Katsuichi; Konishi, Yoshitaka; Ohuchida, Shuichi; and Hashimoto, Shinsuke, 4,207,332, Cl. 424-285.000.

Area Lighting Research, Inc.: *See—*
Duve, George; and DiCarlo, Daniel, 4,207,500, Cl. 315-119.000.

Arimoto, Shuichi: *See—*
Henmi, Zen-ichi; Arimoto, Shuichi; Kotaki, Akira; and Kitano, Takafumi, 4,207,339, Cl. 424-315.000.

Arledge, Arthur L.: *See—*
Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., 4,207,612, Cl. 364-900.000.

Armco Inc.: *See—*
Grisch, William E., 4,207,282, Cl. 264-257.000.

Armstrong, Brian M.; and King, Kenneth J., to British Steel Corporation. Production of metal compacts. 4,207,120, Cl. 148-16.500.

Armstrong Cork Company: *See—*
Cauler, Caroline A.; and Fantazier, Richard M., 4,207,288, Cl. 422-51.000.
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,207,368, Cl. 428-172.000.

Arnold, Fred E.: *See—*
Helminiak, Thaddeus E.; Benner, Charles L.; Arnold, Fred E.; and Husman, George E., 4,207,407, Cl. 525-425.000.

Arthur D. Little, Inc.: *See—*
Santhanam, Chakra J., 4,206,610, Cl. 62-55.000.

Artt, David W.: *See—*
Barry, Brian; Artt, David W.; and Allen, Susan M., 4,207,027, Cl. 416-96.00R.

Arvanitis, Aristotelis S., to Motorola, Inc. Two-pole, fixed-tuned monolithic crystal frequency discriminator. 4,207,535, Cl. 329-118.000.

ASA S.A.: *See—*
Venot, Jean, 4,206,588, Cl. 57-80.000.

Asahi Corporation: *See—*
Omura, Yoshihiko, 4,207,502, Cl. 318-16.000.

Asahi-Dow Limited: *See—*
Yoshino, Akira; and Iwami, Isamu, 4,207,113, Cl. 106-40.00R.

Asahi Seimitsu Kabushiki Kaisha: *See—*
Matsugu, Youichi; and Gibu, Yoshitaka, 4,206,551, Cl. 33-434.000.

Asai, Akiji: *See—*
Thies, Peter W.; Asai, Akiji; and David, Samuel, 4,207,331, Cl. 424-278.000.

Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, to Mitsubishi Denki Kabushiki Kaisha. Shifting device for continuous magnetic web. 4,206,624, Cl. 72-131.000.

Asano, Kenji, to Nippon Piston Ring Co., Ltd. System for recirculating sealing liquid in a Stirling engine. 4,206,928, Cl. 277-15.000.

ASEA Aktiebolag: *See—*
Hammar, Karl E., 4,207,445, Cl. 200-11.0TC.
Krecker, Wolfgang, 4,207,484, Cl. 310-91.000.

Ashton, Bruce F., to James Joseph Morrison Management Ltd. Press control system. 4,206,666, Cl. 83-63.000.

Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S.: *See—*
Klein, Jean-Claude, 4,206,755, Cl. 128-214.00E.

Astill, Cyril J., to Canadian Patents & Development Ltd. Method of producing seam welded tube. 4,207,453, Cl. 219-61.110.

Atencio, Francisco J. G. Self-stabilized hydromotive assembly. 4,207,015, Cl. 405-78.000.

Aurell, Leif E.: *See—*
Claeson, Karl G.; Aurell, Leif E.; and Simonsson, Leif R., 4,207,232, Cl. 435-23.000.

Austin, Charles C.: *See—*
Yamamoto, Keizo; and Austin, Charles C., 4,207,479, Cl. 307-308.000.

Australian Wire Industries Proprietary Limited: *See—*
Porter, Maxwell R.; Sciffer, Jack P.; Adamiak, Zigmunt P.; and Dim, Alexander, 4,207,362, Cl. 427-367.000.

Avco Corporation: *See—*
Ivanko, Theodore, 4,207,029, Cl. 416-241.00B.

Avedko B.V.: *See—*
Kooiman, Pieter L., 4,206,954, Cl. 312-71.000.

Awamura, Toshio: *See—*
Kumagai, Kiyoshi; Awamura, Toshio; Aikawa, Kiyoshi; and Tatematsu, Tatsuo, 4,206,944, Cl. 296-76.000.

Axen, Udo F., to Upjohn Company, The. 2,2-Difluoro-PGF_1 analogs. 4,207,420, Cl. 560-121.000.

Ayala, Caesar C.: *See—*
Ayala, Joe C.; and Ayala, Caesar C., 4,207,046, Cl. 425-133.100.

Ayala, Joe C.; and Ayala, Caesar C. Tamale machine. 4,207,046, Cl. 425-133.100.

B. F. Goodrich Company, The: *See—*
Gilles, Jack C., 4,207,238, Cl. 260-326.250.
Jorgensen, August H., Jr.; and Woods, Martin E., 4,207,218, Cl. 260-23.70M.
Lai, John T.; and Son, Pyong N., 4,207,228, Cl. 260-45.80N.
Masler, William F., III; and Spaulding, David C., 4,207,405, Cl. 525-328.000.
Sudekum, John H., 4,207,196, Cl. 252-47.500.

Babcock, William E., to RCA Corporation. Switching regulator with reduced inrush current. 4,207,516, Cl. 323-9.000.

Babin, Lucien, to Noranda Mines Limited. Electrode for the electrolytic deposition of metals. 4,207,147, Cl. 204-12.000.

Bader, Eberhard, to Motoren- und Turbinen-Union Munchen GmbH. Gravity-controlled flow valve. 4,206,776, Cl. 137-45.000.

Baer, John S., to Warner Electric Brake & Clutch Co. Step motor with circumferential stators on opposite sides of disc-like rotor. 4,207,483, Cl. 310-49.00R.

Baer, Ralph H.: *See—*
Morrison, Howard J.; and Baer, Ralph H., 4,207,087, Cl. 273-1.00E.

Bagus, Brian M.; and Schrecongost, Ray B., to Marmon Company. DC offset correction circuit for an electronic musical instrument. 4,206,674, Cl. 84-1.010.

Bailey, Denis M., to Sterling Drug Inc. 1,2-Ethanediamine salts of nalidixic acid. 4,207,418, Cl. 546-123.000.

Bailey, Donald L., to Marquest Medical Products, Inc. Syringe device with means for selectively isolating a blood sample after removal of contaminates. 4,206,768, Cl. 128-763.000.

Bailey, Edward A.; and LeBlanc, Louis H., Jr., to Joy Manufacturing Company. Striking bar. 4,206,820, Cl. 173-105.000.

Bajohr, Ekkehard: *See—*
Reich, Hans; and Bajohr, Ekkehard, 4,207,598, Cl. 358-257.000.

Baker, John H., Jr., to Scott Paper Company. Nonwoven fabric. 4,207,367, Cl. 428-171.000.

Baker, Peter J.: *See—*
Hark, William B.; Baker, Peter J.; Headford, Alan; and Jacobs, Barry E. A., 4,207,018, Cl. 406-105.000.

Baker, Roderick J.: *See—*
Finnemore, Harlan E.; and Baker, Roderick J., 4,206,803, Cl. 165-9.000.

Baker, William H. Automated surge weir and rim skimming gutter flow control system. 4,206,522, Cl. 4-512.000.

Balabanov, Georgy P.: *See—*
Nefedov, Boris K.; Dergunov, Jury I.; Rysikhin, Anatoly I.; Manov-Juvensky, Vladimir I.; Balabanov, Georgy P.; and Khoshdurdyev, Khakberdy O., 4,207,212, Cl. 252-468.000.

Baldassarre, Richard; and Graves, James, to McCrory Corporation. Trigger guard for toy. 4,206,563, Cl. 46-1.00E.

Balint, Nikolaous K., to Standard Oil Company (Indiana). Catalyst system. 4,207,206, Cl. 252-429.00B.

Balser, Martin, to Xonics, Inc. Doppler acoustic wind sensor. 4,206,639, Cl. 73-189.000.

Bams, Gijsbert W. P.: *See—*
Visser, Johannes; and Bams, Gijsbert W. P., 4,207,349, Cl. 426-271.000.

Barbedienne, Roger S.: *See—*
Peiffert, Jean; and Barbedienne, Roger S., 4,207,462, Cl. 250-202.000.

Barber, Bernard, to Trio Engineering Limited. Lining of passageways. 4,207,130, Cl. 156-244.130.

Barnes, William; Gerstenberg, Roy W.; Kropa, Gomer E.; and Oakes, Thomas M., to Leesona Corp. Granulator blade construction. 4,206,882, Cl. 241-221.000.

Barnum, Ronald E.: *See—*
Perez, Ricardo L.; Barnum, Ronald E.; and Tefft, Franklin A., 4,206,891, Cl. 244-17.130.

Barry, Brian; Artt, David W.; and Allen, Susan M., to Rolls-Royce Limited. Turbine stator aerofoil blades for gas turbine engines. 4,207,027, Cl. 416-96.00R.

Bartell, Jeffrey M., to Goodyear Tire & Rubber Company, The. Hose shear coupling. 4,206,938, Cl. 285-2.000.

Barthel, Horst; and Bell, Robert R., to Vapor Corporation. Inner element for a flow regulator. 4,206,902, Cl. 251-57.000.

Bartholomay, William G.; Couturier, Gordon W.; Ghosh, Suhas; and Winn, Melvin, to International Telephone and Telegraph Corporation. Test arrangement for communication paths in time-division multiplexed switching systems. 4,207,433, Cl. 370-13.000.

Barton, William M., Jr.; and Gray, Martin D., to Cipher Data Products, Incorporated. Tape position sensing apparatus for magnetic tape drive. 4,206,890, Cl. 242-184.000.
BASF Aktiengesellschaft: *See*—
Blum, Rainer; and Marx, Matthias, 4,207,222, Cl. 260-29.300.
Eisfeld, Wolfgang; Disteldorf, Walter; and Hettche, Albert, 4,207,255, Cl. 260-546.000.
Hoffmann, Herwig; Mueller, Herbert; Toussaint, Herbert; and Wittwer, Arnold, 4,207,263, Cl. 260-583.00R.
Ladenberger, Volker; Bronstert, Klaus; Fahrbach, Gerhard; and Groh, Wolfgang, 4,207,409, Cl. 525-338.000.
Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, 4,207,243, Cl. 260-347.500.
Oppenlaender, Knut; Kindscher, Wolfgang; and Getto, Elmar, 4,207,285, Cl. 422-16.000.
Perner, Johannes; and Helfert, Herbert, 4,207,199, Cl. 252-174.130.
Petersen, Harro; Pai, Panemangalore S.; and Reichert, Manfred, 4,207,073, Cl. 8-187.000.
Seybold, Guenther; and Eilingsfeld, Heinz, 4,207,233, Cl. 260-158.000.
BASF Wyandotte Corporation: *See*—
Jenkins, Harry L.; Smelser, Gene C.; and Alford, David W., 4,207,254, Cl. 260-508.000.
Batavian Rubber Company Limited: *See*—
Nysse, Karel J.; Beentjes, Hermanus J.; and Mancer, Terence A., 4,206,631, Cl. 73-40.000.
Baum, Burton M.: *See*—
Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., 4,207,070, Cl. 8-111.000.
Bay, Charles L.: *See*—
Hanson, Shelley J.; and Bay, Charles L., 4,206,680, Cl. 84-382.000.
Bayer Aktiengesellschaft: *See*—
Bier, Peter; and Binsack, Rudolf, 4,207,230, Cl. 260-45.95R.
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,207,328, Cl. 424-273.00R.
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.
Traubel, Harro; Konig, Klaus; Muller, Hans J.; and Zorn, Bruno, 4,207,128, Cl. 156-77.000.
von Bonin, Wulf, 4,207,227, Cl. 260-40.0TN.
BBC Aktiengesellschaft: *See*—
Heberle, Hansjorg; and Rudert, Wolfgang, 4,206,607, Cl. 60-611.000.
BBC Brown Boveri & Company Limited: *See*—
De Bruyne, Patrick; and Sittig, Roland, 4,207,584, Cl. 357-38.000.
Beacham, Harry H.; and Hamilton, James P., to FMC Corporation. Alkoxyalkyl phosphate plasticizing compositions. 4,207,225, Cl. 260-30.60R.
Beacham, Harry H., to FMC Corporation. Flame resistant resin compositions. 4,207,269, Cl. 525-2.000.
Bearcroft, Kenneth E., to ITT Industries, Incorporated. Flowmeter. 4,206,642, Cl. 73-194.0VS.
Beattie, Thomas R.; Dininno, Frank P.; and Christensen, Burton G., to Merck & Co., Inc. 6-Substituted methyl penicillins, derivatives and analogues thereof. 4,207,323, Cl. 424-270.000.
Beavon, David K., to Ralph M. Parsons Company, The. Process for sulfur production. 4,207,304, Cl. 423-569.000.
Becke, Walter. Aircraft control. 4,206,894, Cl. 244-114.00R.
Becker, Carl, to Ciba-Geigy AG. Transfer dye. 4,207,067, Cl. 8-470.000.
Becker, Ernst-August: *See*—
Deutsch, Volker; Becker, Ernst-August; and Forstermann, Ulrich, 4,207,593, Cl. 358-106.000.
Beckett, Ralph R. Heat recovery unit. 4,206,805, Cl. 165-80.00C.
Beckham, Joel M.; Easterling, Gene B.; Ringel, Reginald K.; and Wolff, Egon E., to Caterpillar Tractor Co. Work vehicle and ring bearing arrangement therefor. 4,206,818, Cl. 172-781.000.
Beckman Instruments, Inc.: *See*—
Kazmierowicz, Casimir W., 4,207,369, Cl. 428-201.000.
Beecham Group Limited: *See*—
Buckle, Derek R.; and Smith, Harry, 4,207,335, Cl. 424-304.000.
Been, Karl; and Bontenbal, Cornelis, to Bepro B.V. Granulated material and process for the production of granulated materials. 4,207,116, Cl. 106-97.000.
Beentjes, Hermanus J.: *See*—
Nysse, Karel J.; Beentjes, Hermanus J.; and Mancer, Terence A., 4,206,631, Cl. 73-40.000.
Behle, Fritz, to O & K Orenstein & Koppel Aktiengesellschaft. Transporter with pallet cars coupled with each other for escalators. 4,206,708, Cl. 104-172.00B.
Bell, Robert L., to Kavlico Corporation. Capacitive pressure transducer with cut out conductive plate. 4,207,604, Cl. 361-283.000.
Bell, Robert R.: *See*—
Barthel, Horst; and Bell, Robert R., 4,206,902, Cl. 251-57.000.
Bell Telephone Laboratories, Incorporated: *See*—
Gyorgy, Ernst M.; and Schnettler, Frank J., 4,207,613, Cl. 365-27.000.
Tretola, Angelo R., 4,207,137, Cl. 156-627.000.
Bell, Thomas J. Natural energy conversion, storage and electricity generation system. 4,206,608, Cl. 60-698.000.
Belozerov, Viktor A.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Bemis Company, Inc.: *See*—
Connolly, Hugh R., 4,206,846, Cl. 206-597.000.
Benasutti Asst., Ltd.: *See*—
Eberle, William J., 4,206,601, Cl. 60-398.000.
Bendix Corporation, The: *See*—
Elliott, Delbert R., 4,206,950, Cl. 303-110.000.
Gardner, Paul J., 4,207,084, Cl. 55-181.000.
Hall, James R.; and Whallon, William P., Jr., 4,206,958, Cl. 339-49.00R.
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; Hebert, Raymond T.; and King, Edward A., 4,207,472, Cl. 250-563.000.
Benet, Daniel: *See*—
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Benkoe, Elisabeth: *See*—
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 4,206,925, Cl. 273-248.000.
Benkoe, Elisabeth, executrix: *See*—
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 4,206,925, Cl. 273-248.000.
Benkoe, Erwin, deceased: *See*—
Goldfarb, Adolph E.; Benkoe, Erwin, deceased; Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., 4,206,925, Cl. 273-248.000.
Benner, Charles L.: *See*—
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Heisner, Donald N.; and Bentivegna, Charles R., 4,207,470, Cl. 250-358.00T.
Benuzzi, Gino, to Giben Impianti S.p.A. Device for the longitudinal shortening of panels in panel cutting machines. 4,206,670, Cl. 83-404.200.
Bepex Corporation: *See*—
Grant, George N.; and Campbell, Douglas B., 4,206,696, Cl. 99-457.000.
Bepro B.V.: *See*—
Been, Karl; and Bontenbal, Cornelis, 4,207,116, Cl. 106-97.000.
Berber, Viktor A.; Pervushin, Evgeny S.; Jushunev, Marat N.; Garanin, Ernest M.; Kholin, Vladimir G.; and Murtazin, Khafiz M. Device for introducing samples into fluid analyzer. 4,206,650, Cl. 73-421.00R.
Beretta, Germano; Seveso, Cesare; and Tuci, Giulio, to Industrie Pirelli S.p.A. Electrical power cable with stranded insulated wires. 4,207,427, Cl. 174-26.00R.
Bergman, Per, to Aktiebolaget SKF. Measuring tool for taper bores. 4,206,548, Cl. 33-174.00E.
Bernard, Vincent E., to Jimmy Dean Meat Company, Inc., The. Method of extruding semi-fluid material through a heated extruder nozzle and heated extruder nozzle. 4,207,281, Cl. 264-176.00R.
Berry, Kenneth L., to Du Pont de Nemours, E. I., and Company. Acicular α-iron particles, their preparation and recording media employing same. 4,207,092, Cl. 75-0.5AA.
Bertin & Cie: *See*—
Ricard, Claude F. F.; Chouard, Claude-Henri; and MacLeod, Patrick, 4,207,441, Cl. 179-107.00R.
Bertoldo, Giorgio: *See*—
Bottasso, Franco; and Bertoldo, Giorgio, 4,207,133, Cl. 156-415.000.
Bertram, Francis E. Hose washing machine. 4,206,526, Cl. 15-40.000.
Bertus, Brent J.: *See*—
McKay, Dwight L.; and Bertus, Brent J., 4,207,204, Cl. 252-411.00R.
Bessin, Pierre: *See*—
Thuillier, Germaine; Laforest, Jacqueline; and Bessin, Pierre, 4,207,319, Cl. 424-248.510.
Best, Willie H. Electrical infrared radiant heater. 4,207,456, Cl. 219-345.000.
Beyersdorf, Hartwig. Electric machine. 4,207,487, Cl. 310-268.000.
Bielka, Robert P. Apparatus for detecting animal estrus. 4,206,766, Cl. 128-738.000.
Bier, Peter; and Binsack, Rudolf, to Bayer Aktiengesellschaft. Block copolyesters which crystallize rapidly. 4,207,230, Cl. 260-45.95R.
Biesemeyer, William M. Table saw fence system. 4,206,910, Cl. 269-236.000.
Bill, Robert C.; and Ludwig, Lawrence P., to United States of America, National Aeronautics and Space Administration. Composite seal for turbomachinery. 4,207,024, Cl. 415-174.000.
Bingham, Henry, to Boart Hardmetals (Proprietary) Limited. Percussive slot cutter. 4,206,947, Cl. 299-10.000.
Binsack, Rudolf: *See*—
Bier, Peter; and Binsack, Rudolf, 4,207,230, Cl. 260-45.95R.
Biomedical Engineering Corp.: *See*—
Pappas, Michael J.; and Buechel, Frederick F., 4,206,517, Cl. 3-1.910.
Biophysics Research & Consulting Corporation: *See*—
Gut Boucher, Raymond M., 4,207,286, Cl. 422-21.000.
Biraghi, Giorgio: *See*—
De Marco, Franco; and Biraghi, Giorgio, 4,207,438, Cl. 179-18.00G.
Birke, Walter: *See*—
Petersohn, Gerhard; von der Eltz, Hans-Ulrich; Birke, Walter; and Schon, Franz, 4,207,058, Cl. 432-59.000.

Bischoff, William F.; and Steiner, Peter, to Foster Wheeler Energy Corporation. System for reducing sulfur dioxide. 4,207,292, Cl. 422-232.000.

Bivona, Vincent J., to Vin-Lyn Enterprises, Inc. Exercise shoes for simulated jogging. 4,206,558, Cl. 36-7.500.

Black & Decker Inc.: *See*—
Palm, Bernhard, 4,206,657, Cl. 74-50.000.

Blackman, Bruce A., to Halliburton Company. Method and apparatus for indicating the downhole arrival of a well tool. 4,206,810, Cl. 166-336.000.

Blair, Alan: *See*—
Mason, David R.; Blair, Alan; and Stevenson, John S., 4,207,149, Cl. 204-46.00G.

Blanchard, Eugene J.; Bruno, Joseph S.; and Gautreaux, Gloria A., to United States of America, Agriculture. Process for producing chambray and other dyed fabrics through phosphorylation. 4,207,068, Cl. 8-493.000.

Blatchford, Brian G.; and Tucker, Paul A., to Chas. A. Blatchford & Sons Limited. Stabilized artificial knee mechanism. 4,206,519, Cl. 3-27.000.

Block, Philip M. Material sorter. 4,207,177, Cl. 209-44.200.

Blose, John B.: *See*—
Gilkeson, Robert F.; and Blose, John B., 4,207,557, Cl. 340-178.000.

Bloxam, James M. Switchless D.C. multifunction tester. 4,207,517, Cl. 324-51.000.

Blum, Rainer; and Marx, Matthias, to BASF Aktiengesellschaft. Aqueous coating agents, impregnating agents and adhesives. 4,207,222, Cl. 260-29.300.

Boart Hardmetals (Proprietary) Limited: *See*—
Bingham, Henry, 4,206,947, Cl. 299-10.000.

BOC Limited: *See*—
Cox, Lawrence A.; and Smethers, John D., 4,206,754, Cl. 128-204.210.

Boehme, Werner R.; and Schlaeger, Albert J., to Fats & Proteins Research Foundation, Inc. Internal sealant for concrete. 4,207,115, Cl. 106-95.000.

Boehringer-Mannheim GmbH: *See*—
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,207,341, Cl. 424-319.000.

Boeing Company, The: *See*—
Howard, Philip, 4,206,893, Cl. 244-54.000.
Larsen, Hals N.; and Kamber, Peter W., 4,206,597, Cl. 60-226.00R.

Boisvret, Adrien J. Musical rhythm inductor. 4,206,682, Cl. 84-484.000.

Bolan, Joseph A., to Drackett Company, The. Tile and grout cleaner. 4,207,215, Cl. 252-542.000.

Bonnyay, Laszlo; and Elsken, James C., to Dorr-Oliver Incorporated. Corn wet milling system and process for manufacturing starch. 4,207,118, Cl. 127-24.000.

Bontenbal, Cornelis: *See*—
Been, Karl; and Bontenbal, Cornelis, 4,207,116, Cl. 106-97.000.

Boon, Derk J., to Reeves Brothers, Inc. Process and apparatus for continuous production of polyurethane foam. 4,207,279, Cl. 264-54.000.

Booth, Robert G. Apparatus for filtering and cooling oil or other fluids. 4,207,187, Cl. 210-130.000.

Borg-Warner Corporation: *See*—
Kestner, Mark O.; and Teliszczak, Pamela J., 4,207,300, Cl. 423-299.000.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,207,213, Cl. 252-474.000.
Willis, Gordon A., 4,206,900, Cl. 251-14.000.

Boron, Joseph J. Sliding sleeve sampler. 4,206,651, Cl. 73-425.40R.

Bostwick, Myron A., Jr.: *See*—
Tomison, William H.; Janko, Bozidar; Bostwick, Myron A., Jr.; and Silzars, Aris, 4,207,492, Cl. 315-3.000.

Bottasso, Franco; and Bertoldo, Giorgio, to Industrie Pirelli S.p.A. Tire-building drum. 4,207,133, Cl. 156-415.000.

Boulanger, Edward L.: *See*—
Tantillo, James M.; and Boulanger, Edward L., 4,206,960, Cl. 339-61.00R.

Bourdeau, Romeo G.: *See*—
Metcalfe, Robert A.; and Bourdeau, Romeo G., 4,207,040, Cl. 425-8.000.

Bove, Francis S.; and Herbstman, Sheldon, to Texaco Inc. Gasoline-ethanol fuel mixture solubilized with ethyl-t-butyl ether. 4,207,076, Cl. 44-56.000.

Bove, Francis S.; Sweeney, William M.; and Herbstman, Sheldon, to Texaco Inc. Gasoline-ethanol fuel mixture solubilized with methyl-t-butyl-ether. 4,207,077, Cl. 44-56.000.

Bower, Allen M., to Emco Wheaton, Inc. Fluid dispensing nozzle. 4,206,791, Cl. 141-392.000.

Bowerman, Galen. Scraper blade mechanism for double disc. 4,206,817, Cl. 172-559.000.

Bowley, Robert J. Method and apparatus for improving the fuel efficiency of a laundry dryer. 4,207,056, Cl. 432-3.000.

Bowmar Instrument Corporation: *See*—
Herr, Robert W., 4,206,658, Cl. 74-128.000.

Boyett, Vernon H.; and Devine, Robert W. Point-to-point self-plumbing apparatus and method. 4,206,550, Cl. 33-286.000.

Bradley, Robert F., to Micro-Circuits Company. Time-lapse indicator or the like. 4,206,838, Cl. 194-4.00F.

Bradshaw, Ralph W., to Phillips Petroleum Company. Combination hydrocarbon cracking, hydrogen production and hydrocracking. 4,207,167, Cl. 208-68.000.

Brand, Abraham: *See*—
Desai, Ashok K.; Brand, Abraham; Dunstan, Eric M.; and Marinello, Raymond J., 4,207,601, Cl. 360-78.000.

Brandenstein, Manfred: *See*—
Ernst, Horst; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,206,951, Cl. 308-6.00C.
Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Walter, Lothar, 4,206,952, Cl. 308-8.200.

Brandes, Wilhelm: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,207,328, Cl. 424-273.00R.

Braun, Gerd: *See*—
Frank, Martin A.; and Braun, Gerd, 4,206,616, Cl. 62-406.000.

Brennan, James A.: *See*—
Lucki, Stanley J.; and Brennan, James A., 4,207,208, Cl. 252-455.00Z.

Brent, Richard W., to Emerson Electric Co. Electric heating elements. 4,207,552, Cl. 338-322.000.

Brewer, Andrew I., to Star-Kist Foods, Inc. Animal litter process. 4,206,718, Cl. 119-1.000.

Brink, Fredericus J., to Ingenieursbureau Het Noorden B.V. Clothes-horse. 4,206,847, Cl. 211-1.300.

Brinkley, Max D.: *See*—
Ray, Gilbert W.; and Brinkley, Max D., 4,206,798, Cl. 157-13.000.

British Hydromechanics Research Association, The: *See*—
Hark, William B.; Baker, Peter J.; Headford, Alan; and Jacobs, Barry E. A., 4,207,018, Cl. 406-105.000.

British Petroleum Company Limited, The: *See*—
Webb, Michael G., 4,207,191, Cl. 210-242.00S.

British Steel Corporation: *See*—
Armstrong, Brian M.; and King, Kenneth J., 4,207,120, Cl. 148-16.500.

British Vinegars: *See*—
Davies, Thomas M. C., 4,207,351, Cl. 426-387.000.

Broadband Technologies, Inc.: *See*—
McVoy, David S., 4,207,431, Cl. 179-1.0MN.

Broggi, Renato; and Cotti, Gino, to Ankerfarm S.p.A. Process for the preparatin of α-6-deoxytetracyclines. 4,207,258, Cl. 260-559.0AT.

Brombach, Hansjoerg. Vortex chamber valve. 4,206,783, Cl. 137-810.000.

Bronstert, Klaus: *See*—
Ladenberger, Volker; Bronstert, Klaus; Fahrbach, Gerhard; and Groh, Wolfgang, 4,207,409, Cl. 525-338.000.

Broughton, Donald R.: *See*—
Russ, Karl J.; and Broughton, Donald R., 4,207,211, Cl. 252-466.00J.

Brown, Boveri & Cie AG: *See*—
Meinhold, Henner; Haar, Wilhelm; and Fischer, Wilfried, 4,207,386, Cl. 429-62.000.

Brown, Donald J., to Knox Manufacturing Co. Supporting leg assembly for an illuminated transparency viewer. 4,206,559, Cl. 40-361.000.

Brown, Henry M.; and Mitchell, Richard L., to Dana Corporation. Centrifugal clutch having electromagnetic release. 4,206,837, Cl. 192-90.000.

Brown, Lawrence G. Infinitely variable (from zero up) transmissions, with constant or harmonic power input and a chain gear multiaction cam. 4,206,660, Cl. 74-393.000.

Brown, Marvin R.; Rivier, Jean E. F.; and Vale, Wylie W., Jr., to Salk Institute for Biological Studies, The. Peptides having analgesic and thermoregulative properties. 4,207,311, Cl. 424-177.000.

Brown, Maurice H. Terminal forming and installing apparatus. 4,206,861, Cl. 226-134.000.

Brown, Patrick M.; and Falletta, Charles E., to Foote Mineral Company. Process for producing high purity lithium carbonate. 4,207,297, Cl. 423-179.500.

Brubaker, Gaylen R.: *See*—
Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., 4,207,070, Cl. 8-111.000.

Bruce, Albert I. Blow out preventer. 4,206,929, Cl. 277-34.000.

Bruckner Apparatebau GmbH: *See*—
Koch, Werner, 4,206,876, Cl. 239-455.000.
Petersohn, Gerhard; von der Eltz, Hans-Ulrich; Birke, Walter; and Schon, Franz, 4,207,058, Cl. 432-59.000.
Schuierer, Manfred, 4,207,072, Cl. 8-137.000.

Bruno, Joseph S.: *See*—
Blanchard, Eugene J.; Bruno, Joseph S.; and Gautreaux, Gloria A., 4,207,068, Cl. 8-493.000.

Bucalo, Louis. Control systems and methods utilizing magnetically retentive bodies. 4,206,749, Cl. 128-1.00R.

Buchel, Karl H.: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,207,328, Cl. 424-273.00R.

Buck, Daniel C., to United States of America, Air Force. Reflection mode notch filter. 4,207,547, Cl. 333-209.000.

Buckle, Derek R.; and Smith, Harry, to Beecham Group Limited. Indan-1,3-diones. 4,207,335, Cl. 424-304.000.

Buckshaw, Thomas M.: *See*—
Manecke, Siegfried E.; and Buckshaw, Thomas M., 4,206,780, Cl. 137-387.000.

Buechel, Frederick F.: *See*—
Pappas, Michael J.; and Buechel, Frederick F., 4,206,517, Cl. 3-1.910.

Buettner, Karl: *See—*
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Bunemann, Hans: *See—*
Muller, Werner; Eigel, Antonin; Schuetz, Hans-Jurgen; and Bunemann, Hans, 4,207,200, Cl. 252-184.000.
Burchesky, Robert D.: *See—*
Coplan, Myron J.; Burchesky, Robert D.; and Sebring, Robert E., 4,207,192, Cl. 210-321.00R.
Burda, Robert E.: *See—*
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., 4,206,816, Cl. 172-311.000.
Burdett, Harry W., Jr. Opening and emptying of bags filled with bulk materials. 4,207,021, Cl. 414-412.000.
Burke, James D.: *See—*
MacCready, Paul B., Jr.; Lissaman, Peter B. S.; and Burke, James D., 4,206,892, Cl. 244-45.00A.
Burridge, Len, Jr., to Haag, Ron. Pyramid container device. 4,206,842, Cl. 206-45.190.
Burzin, Klaus; Mumcu, Salih; Feldmann, Rainer; Jadamus, Hans; and Feinauer, Roland, to Chemische Werke Huls Aktiengesellschaft. Method for the preparation and use of polyether ester amides with units of the starting components randomly distributed in the polymer chain. 4,207,410, Cl. 528-288.000.
Butera, Benjamin J. Gasoline nozzle adaptors. 4,206,792, Cl. 141-392.000.
Butland, Roger J.: *See—*
Graham, Peter B.; and Butland, Roger J., 4,207,548, Cl. 333-225.000.
Butter, Stephen A.; Hanson, Francis V.; and Sherry, Howard S., to Mobil Oil Corporation. Conversion of synthesis gas with cobalt-containing fluid catalyst. 4,207,248, Cl. 260-449.60R.
Butter, Stephen A.; and Sherry, Howard S., to Mobil Oil Corporation. Conversion of synthesis gas with iron-containing fluid catalyst. 4,207,250, Cl. 260-449.60R.
Byrd, Norman R.; and Luoto, Reino E., to McDonnell Douglas Corporation. Ozone removal filter having manganese dioxide coated thereon. 4,207,291, Cl. 422-122.000.
C. Cretors and Company: *See—*
Cretors, Charles D., 4,206,695, Cl. 99-323.900.
Cadillac, John G.: *See—*
Cadillac, Joseph A.; and Cadillac, John G., 4,206,896, Cl. 248-310.000.
Cadillac, Joseph A.; and Cadillac, John G. Mount for a power rescue tool. 4,206,896, Cl. 248-310.000.
Cale, Albert D., Jr.: *See—*
Lunsford, Carl D.; and Cale, Albert D., Jr., 4,207,327, Cl. 424-273.00P.
California Processing Machinery: *See—*
Meissner, Konrad E., 4,206,697, Cl. 99-489.000.
Cam Gears Limited: *See—*
Adams, Frederick J., 4,206,827, Cl. 180-132.000.
Cambridge Instrument Company, Inc.: *See—*
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Pegnim, Timothy C., 4,207,161, Cl. 204-195.00P.
Campbell, Douglas B.: *See—*
Grant, George N.; and Campbell, Douglas B., 4,206,696, Cl. 99-457.000.
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., to Eastman Kodak Company. Element for photographic use containing crosslinkable polymers having acrylamidophenol units. 4,207,109, Cl. 430-536.000.
Campbell, Willis R.: *See—*
Freimuth, John H.; Clevenger, James T., Jr.; Campbell, Willis R.; and Diederich, Anthony F., Jr., 4,206,587, Cl. 56-341.000.
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, to Agence Nationale de Valorisation de la Recherche (ANVAR). Movable extraction electrode for an ion source. 4,207,489, Cl. 313-363.000.
Canadian Patents & Development Ltd.: *See—*
Astill, Cyril J., 4,207,453, Cl. 219-61.110.
Canon Kabushiki Kaisha: *See—*
Ikemori, Keiji, 4,206,973, Cl. 350-214.000.
Kitagishi, Nozomu, 4,206,976, Cl. 350-218.000.
Sunouchi, Akio; Tokuda, Ryuji; Uchidoi, Masanori; Kumazawa, Kenichi; and Iwashita, Tomonori, 4,206,987, Cl. 354-44.000.
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., to Lutron Electronics Co., Inc. Ballast structure for central high frequency dimming apparatus. 4,207,497, Cl. 315-96.000.
Capewell, Dennis: *See—*
Spira, Joel S.; Capewell, Dennis; and Luchaco, David G., 4,207,498, Cl. 315-97.000.
Capps, David B.; Angelo, Mario M.; and Culbertson, Townley P., to Warner-Lambert Company. Amino-substituted imidazo[1,2-a:3,4-a']diquinolin-15-ium salts compositions and method of use. 4,207,320, Cl. 424-248.560.
Carborundum Company, The: *See—*
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., 4,207,408, Cl. 525-503.000.
Storm, Roger S., 4,207,226, Cl. 260-38.000.
Carle & Montanari S.p.A.: *See—*
Lionello, Vincenzo, 4,207,044, Cl. 425-126.00R.
Carleton, Peter S., to Upjohn Company, The. Process for preparing hydroquinone and acetone. 4,207,265, Cl. 568-385.000.
Carmosin, Richard J.: *See—*
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Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., to Abbott Laboratories. Method of producing 2-deoxyfortimicin A. 4,207,415, Cl. 536-17.00R.
Carrier Corporation: *See—*
Lang, Richard D.; and Matthews, Richard E., 4,206,611, Cl. 62-85.000.
Carson, John R.; Carmosin, Richard J.; and Stefanski, Anthony T., to McNeilab, Inc. Preparation of pyrrole-2-acetates. 4,207,237, Cl. 260-326.200.
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., to Societe Nationale des Poudres et Explosifs. Apparatus and process for continuous surface treatments of propellant powders. 4,207,008, Cl. 366-309.000.
Cass, Richard: *See—*
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Cassidy, Patrick J.; and Kahan, Jean S., to Merck & Co., Inc. Process for deacylating N-acyl-6-substituted-2-[2-aminoethylthio]-1-carbadethiapen-2-em-3-carboxylic acids. 4,207,395, Cl. 435-119.000.
Castel, Claude, to COVEM - Compagnie de Vente d'Engins Mecaniques. Powered vehicle for loading, transportation and unloading of heaped materials. 4,207,022, Cl. 414-685.000.
Caterpillar Tractor Co.: *See—*
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Haak, Willard J.; Marsden, Howard A.; and Moots, Paul C., 4,206,688, Cl. 91-452.000.
Jenkel, Howard D.; and Sheldon, Victor L., Jr., 4,206,725, Cl. 123-32.00R.
Johnson, John L., Jr.; Vize, Robert M.; and Wiggins, Noel D., 4,206,726, Cl. 123-41.350.
Peterson, Wayne A., 4,206,689, Cl. 91-516.000.
Satzler, Ronald L., 4,207,052, Cl. 425-394.000.
Cauler, Caroline A.; and Fantazier, Richard M., to Armstrong Cork Company. Photoinitiator system for photopolymerizable compositions. 4,207,288, Cl. 422-51.000.
Cave, David L.; and Pace, Wilson D., to Motorola, Inc. Differential field effect transistor amplifier having a compensating field effect transistor current source. 4,207,537, Cl. 330-253.000.
CBS Inc.: *See—*
Wilson, Gregg, 4,206,679, Cl. 84-314.00N.
Celanese Corporation: *See—*
Collins, George L.; Costanza, John R.; and Conciatori, Anthony B., 4,207,156, Cl. 204-159.240.
Hannon, Martin J.; and Forschirm, Alex S., 4,207,359, Cl. 427-195.000.
Martin, Preston K.; Hoffman, William A., III; and Trebellas, John C., 4,207,155, Cl. 204-159.230.
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Cerrillo, Vincente P. Processes for protecting proteic foodstuffs against spoilage. 4,207,344, Cl. 426-7.000.
Chaikin, Malcolm; and McCracken, John R., to Unisearch Limited. Process for separation of wool wax from fats in wool grease or mixtures containing wool grease. 4,207,244, Cl. 260-397.250.
Chang, Shih-chih. Gas-liquid reaction method and apparatus. 4,207,180, Cl. 210-7.000.
Chapman, Derek D.; and Wu, E-Ming, to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible heterocyclylazonaphthol dye-releasing compounds. 4,207,104, Cl. 430-225.000.
Chas. A. Blatchford & Sons Limited: *See—*
Blatchford, Brian G.; and Tucker, Paul A., 4,206,519, Cl. 3-27.000.
Chaumont, Jacques: *See—*
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Chauvin, Yves; Commereuc, Dominique; and Tkatchenko, Igor, to Institut Francais du Petrole. Catalytic process for synthesizing methane by reacting hydrogen with carbon monoxide. 4,207,249, Cl. 260-449.60M.
Chem-Plast S.p.A.: *See—*
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Chemische Werke Huls Aktiengesellschaft: *See—*
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Kalka, Josef; and Winter, Hermann, 4,207,412, Cl. 528-499.000.
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Chemizard, Andre, to Compagnie Generale des Etablissements Michelin. Tire with self-sealing inner coating. 4,206,796, Cl. 152-347.000.
Chemprene, Inc.: *See—*
Thrane, Gordon E.; and DePerro, Brian L., 4,206,930, Cl. 277-165.000.
Cheng, Tai C.; Fieldhouse, John W.; Oberster, Arthur E.; and Graves, Daniel F., to Firestone Tire & Rubber Company, The. Oil-free elastomeric poly(aryloxyphosphazene) copolymer foam. 4,207,403, Cl. 521-180.000.
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Hinds, Robert J., 4,207,185, Cl. 210-44.000.
Lindquist, Robert H., 4,207,287, Cl. 422-33.000.

MacFadden, Donald L., 4,207,396, Cl. 435-244.000.

Chiba, Kiyoshi: *See*—
Sobajima, Shigenobu; Chiba, Kiyoshi; Itoh, Kunio; Yonemura, Utami; and Mitani, Yuji, 4,206,615, Cl. 62-248.000.

Chisaki, Tatsu: *See*—
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Chisholm, William M., to Western Electric Company, Inc. Pin insertion tool. 4,206,543, Cl. 29-739.000.

Chisso Corporation: *See*—
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Chiu, Chung-Wai; and Rutenberg, Morton W., to National Starch and Chemical Corporation. Cold-water dispersible, gelling starches. 4,207,355, Cl. 426-578.000.

Chloride Group Limited: *See*—
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Chouard, Claude-Henri: *See*—
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Christe, Karl O., to United States of America, Navy. High detonation pressure explosives. 4,207,124, Cl. 149-92.000.

Christensen, Burton G.: *See*—
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Christian, Hubert E., to Dart Industries Inc. Food container. 4,206,845, Cl. 206-508.000.

Christman, William J., to UOP Inc. Liquid-liquid extraction apparatus and process. 4,207,174, Cl. 208-226.000.

Chubb, Talbot A., to United States of America, Navy. Spiral-passage heat exchanger. 4,206,746, Cl. 126-438.000.

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Churchman, Fred L. Toy novelty device. 4,206,566, Cl. 46-47.000.

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Becker, Carl, 4,207,067, Cl. 8-470.000.
Kaiser, Leo E.; Scheidegger, Hans; and Haase, Jaroslav, 4,207,184, Cl. 210-37.00R.
Randell, Donald R.; Hyde, Thomas G.; Lamb, Frank; Clubley, Brian G.; and Davis, Boyce I. D., 4,207,224, Cl. 260-30.60R.

Ciba-Geigy Corporation: *See*—
Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, 4,207,338, Cl. 424-309.000.
Fischer, Hanspeter, 4,207,091, Cl. 71-113.000.
Spivack, John D., 4,207,229, Cl. 260-45.8NT.
Walker, Gordon N., 4,207,317, Cl. 424-245.000.

Cieslak, Edith E. Combination figure toy and toy bin. 4,206,567, Cl. 46-116.000.

Cifalde, William A. Extension cord clip. 4,206,961, Cl. 339-75.00P.

Cilag-Chemie A.G.: *See*—
Richter, Carl; and Feth, Georg, 4,207,326, Cl. 424-273.00P.

Cipher Data Products, Incorporated: *See*—
Barton, William M., Jr.; and Gray, Martin D., 4,206,890, Cl. 242-184.000.

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Maekawa, Yasuo, 4,206,591, Cl. 368-295.000.

Claeson, Karl G.; Aurell, Leif E.; and Simonsson, Leif R., to AB Kabi. Specific chromogenic enzyme substrates. 4,207,232, Cl. 435-23.000.

Claflin, Warren E.: *See*—
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Clark Equipment Company: *See*—
Goyarts, Wynand M. J. M., 4,206,833, Cl. 182-2.000.

Clark, Gary A.; Johnson, Frederick W.; and Promis, George G., Jr., to International Business Machines Corporation. Job recovery method and apparatus. 4,206,996, Cl. 355-14.00C.

Clarke, David R., to General Motors Corporation. Sand-seal for rotary acoustic sand-core shakeout. 4,206,801, Cl. 164-401.000.

Clearwaters, Walter L.; and Einstein, Lloyd T., to United States of America, Navy. Electrically steerable sonar system. 4,207,621, Cl. 367-122.000.

Clevenger, James T., Jr.: *See*—
Freimuth, John H.; Clevenger, James T., Jr.; Campbell, Willis R.; and Diederich, Anthony F., Jr., 4,206,587, Cl. 56-341.000.

Clifton, Colin R., to Ford Motor Company. Air cleaner air expansion chamber construction. 4,207,085, Cl. 55-276.000.

Closset, Gerard P.: *See*—
Glomb, John W.; and Closset, Gerard P., 4,207,143, Cl. 162-207.000.

Clough, David: *See*—
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Cloutier, Maurice. Dice block puzzle. 4,206,923, Cl. 273-160.000.

Clubley, Brian G.: *See*—
Randell, Donald R.; Hyde, Thomas G.; Lamb, Frank; Clubley, Brian G.; and Davis, Boyce I. D., 4,207,224, Cl. 260-30.60R.

Cobb, John M., to Texaco Inc. Method for recycling exhaust gas from an internal combustion engine. 4,206,730, Cl. 123-119.00A.

Cobb, Sanford; Conder, Terrence M.; and Vanderwerf, Dennis F., to Minnesota Mining and Manufacturing Company. Directional front projection screen. 4,206,969, Cl. 350-126.000.

Cochran, Stuart A.: *See*—
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Cohen, Murray S.: *See*—
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,207,213, Cl. 252-474.000.

Cole, Edward F., to United Technologies Corporation. Fuel collecting and recycling system. 4,206,595, Cl. 60-39.09F.

Cole, Howard W., Jr. Apparatus for making small bubble foam. 4,207,202, Cl. 252-359.00E.

Cole, John L.: *See*—
Scholl, Richard A.; and Cole, John L., 4,207,293, Cl. 422-249.000.

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Colgate-Palmolive Company: *See*—
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Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, to Fabrique Suisse de Crayons Caran d'Ache S.A. Gas-fired cigarette lighter. 4,207,032, Cl. 431-150.000.

Collins, George L.; Costanza, John R.; and Conciatori, Anthony B., to Celanese Corporation. Ultraviolet photoinitiator systems utilizing aromatic sulfides and triplet state energizers. 4,207,156, Cl. 204-159.240.

Collins, Michael E.: *See*—
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Collins, Robert. Necktie molding device and method of using. 4,206,513, Cl. 2-152.00R.

Collum, Paulette, to Abbott Laboratories. Isofortimicin. 4,207,314, Cl. 424-181.000.

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Cone, Malcolm S. Truck dock wheel safety chock system. 4,207,019, Cl. 414-373.000.

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Consortium f/ r Elektrochemische Industrie GmbH: *See*—
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Continental Group, Inc., The: *See*—
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Cook, Roger G. Invalid supporting structure. 4,206,524, Cl. 5-468.000.

Cooper, Jack M. Closet storage unit. 4,206,955, Cl. 312-107.000.

Cooper, William E. Device for supporting a vessel. 4,206,570, Cl. 47-71.000.

Coover, Stephen R., to Research Triangle Institute. Radiation dosimeter charger and method. 4,207,471, Cl. 250-377.000.

Coplan, Myron J.; Burchesky, Robert D.; and Sebring, Robert E., to Albany International Corp. Hollow filament separatory module and method of fabrication. 4,207,192, Cl. 210-321.00R.

Coran, Aubert Y.; and Patel, Raman, to Monsanto Company. Compositions of chlorinated polyethylene rubber and nylon. 4,207,404, Cl. 525-184.000.

Cosier, James E. H.; and Jenkins, Peter D., to Post Office, The. Telecommunications submarine cable assemblies. 4,207,428, Cl. 174-70.00S.

Cosman, Eric R. Pressure-balanced telemetric pressure sensing method. 4,206,761, Cl. 128-660.000.

Cosman, Eric R. Telemetric differential pressure sensing method. 4,206,762, Cl. 128-660.000.

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Courty, Philippe; Martino, Germain; and Le Page, Jean-Francois, to Institut Francais du Petrole. Process for the steam dealkylation of aromatic hydrocarbons. 4,207,169, Cl. 208-124.000.

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Cox, Lawrence A.; and Smethers, John D., to BOC Limited. Lung ventilators. 4,206,754, Cl. 128-204.210.
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Creutz, Hans G., deceased (by Creutz, Katharina A., administratrix); Martin, Sylvia; Saez, Debra J.; and Herr, Roy W., to Oxy Metal Industries Corporation. Electroplating bath and process. 4,207,150, Cl. 204-55.00R.
Creutz, Katharina A., administratrix: *See*—
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Cryomedics, Inc.: *See*—
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Csepke, Neil A. Film-print processor. 4,206,993, Cl. 354-323.000.
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Ondetti, Miguel A.; and Cushman, David W., 4,207,337, Cl. 424-309.000.
Ondetti, Miguel A.; and Cushman, David W., 4,207,342, Cl. 424-319.000.
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D. L. Auld Company, The: *See*—
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DaCosta, Dominick P., to Pennwalt Corporation. Welding filler wire feed apparatus. 4,206,862, Cl. 226-178.000.
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Dahms, Ronald H., to Monsanto Company. Foamable resole resin composition. 4,207,400, Cl. 521-112.000.
Dahms, Ronald H., to Monsanto Company. Foamable resole resin composition. 4,207,401, Cl. 521-112.000.
Daikoku, Takahiro; Nakayama, Wataru; and Uede, Taisei, to Hitachi, Ltd. Winding structure of electric devices. 4,207,550, Cl. 336-60.000.
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Davis, Stephen, to Cryomedics, Inc. Bearing coupling for enabling the tip of a cryosurgical instrument to be rotated independently of inlet and exhaust tubes. 4,206,760, Cl. 128-303.100.
Davis, Stephen H.; and Etzel, James E., to Water Refining Company, Inc. Method for recovering and treating brine from water softener regeneration. 4,207,397, Cl. 521-26.000.
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Delehonte, Jack F., to S.A. Automobiles Citroen; and Societe Dites Automobiles Peugeot. Device for controlling expansible grinding tools. 4,206,572, Cl. 51-34.00H.
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DeLorenzo, Mario M. Hinge construction. 4,206,532, Cl. 16-191.000.
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Dentino, Mauro J.; Huey, Harry M.; and Letendre, Toni, to Rockwell International Corporation. Frequency domain adaptive filter for detection of sonar signals. 4,207,624, Cl. 367-135.000.
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de Rosa, Daniel, to Regie Nationale des Usines Renault. Safety belt with roller arrangement. 4,206,887, Cl. 242-107.40A.
Desai, Ashok K.; Brand, Abraham; Dunstan, Eric M.; and Marinello, Raymond J., to Pertec Computer Corporation. Transient temperature compensation for moving head disk drive. 4,207,601, Cl. 360-78.000.
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Deutsch, Volker; Becker, Ernst-August; and Forstermann, Ulrich, to Karl Deutsch Pruf- und Messgeratebau GmbH & Co. KG. Method and apparatus for the automatic recognition and evaluation of optical crack indications on the surface of workpieces. 4,207,593, Cl. 358-106.000.

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DeVries, Egbert, to Quad Corporation. Pressure relief valve. 4,206,870, Cl. 229-62.500.

DeVries, Wayne J., to Emerson Electric Co. Terminal board with integral insulated pocket. 4,206,959, Cl. 339-59.00R.

Dexter, Ronald P.: *See—*
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Diamond, Steven E.; Mares, Frank; and Tovrog, Benjamin S., to Allied Chemical Corporation. Hexacoordinated ruthenium moderated production of hydrogen peroxide and sulfur from oxygen and hydrogen sulfide. 4,207,305, Cl. 423-573.00R.

Diaz, Miguel A. Unitary mold-press structure. 4,206,627, Cl. 72-334.000.

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Diehl, Rodney A.; Douglas, Henry; and Watson, Robert W., to General Motors Corporation. Hydrostatic bearing support for a work tool. 4,206,953, Cl. 308-9.000.

Diels, Wolfgang; Krause, Dieter; and Topfer, Dieter, to Hoechst Aktiengesellschaft. Apparatus for developing printing plates comprising upper and lower rolls arranged in pairs. 4,206,527, Cl. 15-102.000.

Diener, Arnulf; Meininghaus, Fritz; Oehmen, Gunter; and Schrott, Robert, to Hoesch Werke Aktiengesellschaft. Method for preheating the oxygen in an oxygen steel making process. 4,207,094, Cl. 75-60.000.

Dietzsch, Eberhard; and Eberitsch, Gerhard. High resolving objective covering a wide spectral r nge. 4,206,972, Cl. 350-214.000.

Dikstein, Shabtay. Measurement of surface properties. 4,206,769, Cl. 128-774.000.

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Dittrich, Jurgen; Heinzerling, Jurgen; and Lux, Peter, to U.S. Philips Corporation. Apparatus for making laminar radiograms. 4,207,595, Cl. 358-111.000.

Djorup, Robert S. Directional heat loss anemometer transducer. 4,206,638, Cl. 73-189.000.

Dobkin, Robert C., to National Semiconductor Corporation. Power IC protection by sensing and limiting thermal gradients. 4,207,481, Cl. 307-310.000.

Dobler, Otto, to Von Roll AG. Gate valve. 4,206,905, Cl. 251-328.000.

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Donn Incorporated: *See—*
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Dotsko, Martin, to Singer Company, The. Lapping block for curved surfaces. 4,206,574, Cl. 51-363.000.

Douglas Dynamics, Inc.: *See—*
Watson, Gary E.; Simi, Edward A.; and Miller, Richard R., 4,206,602, Cl. 60-433.000.

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Douty, George H.: *See—*
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Dow Corning Corporation: *See—*
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Dowa Mining Co., Ltd.: *See—*
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, 4,207,016, Cl. 405-133.000.

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Doyle, Walter M., to Laser Precision Corp. Film measuring apparatus and method. 4,207,467, Cl. 250-338.000.

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Drage, David J.; and Harkness, Lawrence N. Infrared proximity detecting apparatus. 4,207,466, Cl. 250-338.000.

Dragerwerk Aktiengesellschaft: *See—*
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Drkal, Jan: *See—*
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Drori, Mordeki. Self-cleaning filters. 4,207,181, Cl. 210-111.000.

Drutchas, Gilbert H.; Cass, Richard; and Suttkus, David J., to TRW Inc. Pump and motor assembly for use in regulating a flow of fuel from a source of fuel to an operating chamber of an engine of a vehicle. 4,207,033, Cl. 417-251.000.

Dugan, Charles: *See—*
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Dunn, Lloyd G.; and Pohlenz, Elmer E., to Aluminum Company of America. Linerless closure for pressurized container. 4,206,852, Cl. 215-252.000.

Dunstan, Eric M.: *See—*
Desai, Ashok K.; Brand, Abraham; Dunstan, Eric M.; and Marinello, Raymond J., 4,207,601, Cl. 360-78.000.

Du Pont de Nemours, E. I., and Company: *See—*
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Durenec, Peter, to Actus, Inc. Cryogenic surgical apparatus and method. 4,206,609, Cl. 62-6.000.

Durkoppwerke GmbH: *See—*
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Preusser, Gerhard; Dutz, Karl-Heinz; and Goeke, Eberhard, 4,207,081, Cl. 48-210.000.

Duve, George; and DiCarlo, Daniel, to Area Lighting Research, Inc. Cut-off arrangement for and method of protecting a ballast-starter circuit from high pressure sodium lamp cycling malfunction. 4,207,500, Cl. 315-119.000.

E M I Limited: *See—*
LeMay, Christopher A. G., 4,206,653, Cl. 73-602.000.

E. R. Squibb & Sons, Inc.: *See—*
Ondetti, Miguel A.; and Cushman, David W., 4,207,336, Cl. 424-309.000.
Ondetti, Miguel A.; and Cushman, David W., 4,207,337, Cl. 424-309.000.
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Eagle Electric Mfg. Co., Inc.: *See—*
Ludwig, Melvin S.; and Tansi, Hakki M., 4,206,957, Cl. 339-40.000.

Easterling, Gene B.: *See—*
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Chapman, Derek D.; and Wu, E-Ming, 4,207,104, Cl. 430-225.000.
Gilman, Paul B., Jr.; and Koszelak, Thaddeus D., 4,207,103, Cl. 430-494.000.
Godfrey, Darryl A., 4,207,220, Cl. 260-27.00R.
Hiller, Gary L., 4,207,108, Cl. 430-354.000.
Lee, Benedict M., 4,206,860, Cl. 226-97.000.
Shiao, Daniel D.; and Morrow, Lawrence R., 4,207,392, Cl. 430-352.000.
Tyan, Yuan-Sheng, 4,207,119, Cl. 136-89.0TF.

Eastman Whipstock, inc.: *See—*
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Eaton Corporation: *See—*
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Eberhard Hoesch & Sohne GmbH & Co.: *See—*
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Eberle, William J., to Benasutti Asst., Ltd. Compressed air producing, tidal and wave-power collection apparatus for installation in large bodies of water. 4,206,601, Cl. 60-398.000.
Eckhardt, Wolfgang; Kunz, Walter; and Hubele, Adolf, to Ciba-Geigy Corporation. Microbicidal composition. 4,207,338, Cl. 424-309.000.
Econics Corporation: *See—*
Powers, Howard A., 4,206,630, Cl. 73-1.00G.
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., to Carborundum Company, The. High tenacity phenolic resin fibers. 4,207,408, Cl. 525-503.000.
Ed. Liesegang: *See—*
Mueller, Paul A., 4,206,984, Cl. 353-61.000.
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Muller, Werner; Eigel, Antonin; Schuetz, Hans-Jurgen; and Bunemann, Hans, 4,207,200, Cl. 252-184.000.
Eilingsfeld, Heinz: *See—*
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Einstein, Lloyd T.: *See—*
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Eisenberg, Arnold J.: *See—*
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Eisfeld, Wolfgang; Disteldorf, Walter; and Hettche, Albert, to BASF Aktiengesellschaft. Manufacture of very pure halonaphthalic acid anhydrides. 4,207,255, Cl. 260-546.000.
Ekman, Gunnar O., to Nitro Nobel AB. Watergel explosives containing microspheres. 4,207,126, Cl. 149-109.600.
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Elliott, Delbert R., to Bendix Corporation, The. Anti-skid and anti-spin brake system. 4,206,950, Cl. 303-110.000.
Ellison, Kenneth; and Whike, Alan S. Method of curing strip coating. 4,206,553, Cl. 34-28.000.
Elsken, James C.: *See—*
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Elverum, Gerard W., Jr., to TRW Inc. Combustion apparatus having a coaxial-pintle reactant injector. 4,206,594, Cl. 60-258.000.
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Emerson Electric Co.: *See—*
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DeVries, Wayne J., 4,206,959, Cl. 339-59.00R.
Emhart Industries, Inc.: *See—*
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Emmerich, Kenneth C., to Fansteel Inc. Roof drill and drill rod system. 4,206,821, Cl. 175-321.000.
Energy Research Corporation: *See—*
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Energy Sciences and Consultants, Inc.: *See—*
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English, Keith H.; Forney, Edgar W., Jr.; and O'Keefe, Michael F., to AMP Incorporated. Connector filtered adapter assembly. 4,206,963, Cl. 339-147.00R.
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Oehrlein, Willard J.; and Engman, James C., 4,207,390, Cl. 429-179.000.
Enterprise d'Equipments Mecaniques et Hydraulics E.M.H.: *See—*
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Epply, William R. Tensioned net. 4,206,916, Cl. 273-29.00A.
Erbacher, John K.; Hussey, Charles L.; and King, Lowell A., to United States of America, Air Force. Copper (II) chloride-tetrachloroaluminate battery. 4,207,388, Cl. 429-112.000.
Erickson, Donald C. High temperature removal of H_2S from reducing gas. 4,207,298, Cl. 423-210.500.
Ernst, Gerardus J., to Stichting voor Fundamenteel Onderzoek der Materie. Gas laser system. 4,207,540, Cl. 331-94.5PE.
Ernst, Horst; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, to SKF Kugellagerfabriken GmbH. Linear rolling bearing. 4,206,951, Cl. 308-6.00C.
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Espinos Guerrero, Antonio. Introduced in the mechanical and functional structure of stringed instruments. 4,206,678, Cl. 84-267.000.
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Wristers, Harry J., 4,207,205, Cl. 252-429.00B.
Fa. Johs. Link KG: *See—*
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Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, 4,207,032, Cl. 431-150.000.
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Fair, Harry D., Jr.: *See—*
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Falck, Peter L.; and Hamlin, Edmund M., Jr., to Sundstrand Corporation. Measuring system. 4,207,505, Cl. 318-595.000.
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Falletta, Charles E.: *See—*
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Fannin, Loyd W.: *See—*
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Faris, Edwin E., to Metaframe Corporation. Aquarium hood apparatus. 4,206,719, Cl. 119-5.000.
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Fats & Proteins Research Foundation, Inc.: *See—*
Boehme, Werner R.; and Schlaeger, Albert J., 4,207,115, Cl. 106-95.000.
Favre, John A.; and Schmidt, Thomas W., to Phillips Petroleum Company. Isotope analysis with a mass spectrometer using small samples. 4,207,465, Cl. 250-288.000.
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Felker, Merle, to Sheffer Collet Company. Diaphragm chuck with locking ring. 4,206,932, Cl. 279-1.00D.
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Finley, Joseph H.; Brubaker, Gaylen R.; and Baum, Burton M., to FMC Corporation. Peroxygen bleaching and compositions therefor. 4,207,070, Cl. 8-111.000.
Finnemore, Harlan E.; and Baker, Roderick J., to Air Preheater Company, Inc., The. Rotor turndown sensor and control. 4,206,803, Cl. 165-9.000.
Fire Rite, Inc.: *See*—
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Firestone Tire & Rubber Company, The: *See*—
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Fischer, Hanspeter, to Ciba-Geigy Corporation. Method of preventing plants from damage by frost. 4,207,091, Cl. 71-113.000.
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Flintoff, John F., to Davy Powergas, Inc. Sulphur dioxide removal process. 4,207,299, Cl. 423-242.000.
Flood, H. William, to Kennecott Copper Corporation. Electrorefining cell with bipolar electrode and electrorefining method. 4,207,153, Cl. 204-106.000.
Flora, John H.; and Gruber, Henry T., to United States of America, Air Force. Multiple frequency digital eddy current inspection system. 4,207,520, Cl. 324-238.000.
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Beacham, Harry H.; and Hamilton, James P., 4,207,225, Cl. 260-30.60R.
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Konz, Marvin J., 4,207,088, Cl. 71-88.000.
Fock, Jurgen; Schamberg, Eckehard; and Schafer, Werner, to Th. Goldschmidt AG. Substrate web coated with a thermosetting coating resin. 4,207,379, Cl. 428-480.000.
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Gordon, Thomas C., 4,207,611, Cl. 364-580.000.
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Rowley, Stephen K., II, 4,206,939, Cl. 292-263.000.
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Forssell, Harry. Converter motor. 4,207,509, Cl. 318-798.000.
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Fowler, Joe W. Heat cycling apparatus and method for bulk curing tobacco. 4,206,554, Cl. 34-34.000.
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Frank, Martin A.; and Braun, Gerd, to Kohlensaure-Werke Rud. Buse GmbH & Co., Firma. Method and container for cooling goods with dry ice. 4,206,616, Cl. 62-406.000.
Franke, Fritz R.; Hovey, Leonard L.; Mock, George H.; and Patterson, Andrew M., Jr., to Monsanto Company. Electrohydrodimerization process improvement and improved electrolyte recovery process. 4,207,151, Cl. 204-73.00R.
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Freedman, M. David: *See*—
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Fried, John H.; and Harrison, Ian T., to Syntex Corporation. 2-Naphthyl acetic acid derivatives and compositions and methods thereof. 4,207,241, Cl. 260-345.70R.
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Isakson, Larry E.; Stanuszek, Dennis M.; and Fritsche, William E., 4,207,565, Cl. 340-626.000.
Frohberger, Paul-Ernst: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,207,328, Cl. 424-273.00R.
Fuji Electric Co., Ltd.: *See*—
Tanaka, Akio, 4,206,775, Cl. 133-3.00R.
Fuji Photo Film Co., Ltd.: *See*—
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,207,157, Cl. 204-180.00P.
Ikenoue, Shinpei; Masuda, Takao; and Sakawaki, Shinichi, 4,207,112, Cl. 430-566.000.
Odawara, Masaru; Yoyama, Tadao; and Ohashi, Azusa, 4,207,106, Cl. 430-165.000.
Sato, Masamichi, 4,207,105, Cl. 430-432.000.
Tokuda, Kanji, 4,206,998, Cl. 355-77.000.
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, to Ajinomoto Co. Ltd.; and Morishita Pharmaceuticals Co. Ltd. Stable aqueous solutions of glucans and glucan derivatives capable of inhibiting sarcoma in mice. 4,207,312, Cl. 424-180.000.
Fujioka, Yoshiki: *See*—
Kawada, Shigeki; Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,207,504, Cl. 318-561.000.
Fujisawa Pharmaceutical Co., Ltd.: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao;

Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.

Fujitsu Fanuc Limited: *See—*
Kawada, Shigeki; Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,207,504, Cl. 318-561.000.

Fujitsu Limited: *See—*
Nakamura, Hiroshi; Hanano, Naomasa; and Iguchi, Kazuo, 4,207,459, Cl. 455-513.000.

Fujitsu Ten Limited: *See—*
Amaya, Yuji; and Ito, Tatsuo, 4,207,529, Cl. 455-158.000.
Ito, Tatsuo, 4,207,531, Cl. 455-164.000.

Fujiwhara, Mitsuto; Sasaki, Takashi; and Uchida, Takashi, to Konishiroku Photo Industry Co., Ltd. Light-sensitive silver halide color photographic materials. 4,207,111, Cl. 430-376.000.

Fukuda, Sadao; Fukunaga, Hidemi; and Kumano, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Lead alloy for lead-acid batteries and process for producing the alloy. 4,207,097, Cl. 75-166.00D.

Fukunaga, Hidemi: *See—*
Fukuda, Sadao; Fukunaga, Hidemi; and Kumano, Hiroshi, 4,207,097, Cl. 75-166.00D.

Fukuroi, Akio; Hayashi, Masanobu; Yamashita, Hiroshi; and Sugimoto, Isao, to Yoshida Kogyo K.K.; and Nippon Dyeing Machine Manufacturing Co. Ltd. Dyeing apparatus. 4,206,619, Cl. 68-20.000.

Fukutome, Satoru; and Maekawa, Yasuo, to Citizen Watch Co., Ltd. Electronic wristwatch case. 4,206,590, Cl. 368-72.000.

Fukuyama, Toshifumi; and Onji, Norio, to Omron Tateisi Electronics Co. Photoelectric switch. 4,207,464, Cl. 250-239.000.

Fulford, John. Douche appliance. 4,206,520, Cl. 4-665.000.

Furrer, Harald; Soder, Alfons; Komarek, Jaromir; Hinze, Heinz-Joachim; and Munch, Gerhard, to Hoechst Aktiengesellschaft. Pharmaceutical compositions containing xanthines. 4,207,321, Cl. 424-253.000.

Furukawa Denchi Kabushiki Kaisha: *See—*
Hayama, Hideki, 4,207,385, Cl. 429-56.000.

Furukawa Electric Company Ltd., The: *See—*
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,206,807, Cl. 165-105.000.

Furukawa, Yoshiyasu: *See—*
Matsumura, Koichi; Hashimoto, Naoto; and Furukawa, Yoshiyasu, 4,207,324, Cl. 424-273.00R.

Furusawa, Akira; and Udagawa, Yutaka, to Oki Electric Industry Co., Ltd. Pushbutton switch. 4,207,448, Cl. 200-159.00B.

Furuya, Shuichi: *See—*
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,206,807, Cl. 165-105.000.

GAF Corporation: *See—*
Lorenz, Donald H.; and Gruber, Bruce A., 4,207,253, Cl. 260-465.00D.

Gaitten, Ronald E.; Jachimiak, Paul D.; Machmer, James A.; and Wittwer, Alvin L., to International Business Machines Corporation. Backup roll for heated fuser system. 4,207,059, Cl. 432-60.000.

Gall, Arthur: *See—*
Hahn, Alfred; Gall, Arthur; and Jager, Wolfgang, 4,206,989, Cl. 354-182.000.

Gallagher, Eugene: *See—*
Lynch, Alban J.; and Gallagher, Eugene, 4,207,001, Cl. 356-335.000.

Gallagher, Lawrence W., to Motorola, Inc. Electrically tunable inductor and method. 4,207,530, Cl. 455-174.000.

Gallo, William C. Rotary valve assembly having a dual purpose valve element. 4,206,778, Cl. 137-315.000.

Gamblin, Rodger L.; and Marinoff, George, to Mead Corporation, The. Reciprocating paper handling apparatus for use in an ink jet copier. 4,207,579, Cl. 346-75.000.

Gara, Aaron D.; and Lewis, Robert W., to General Motors Corporation. Apparatus for detecting an output image of an optical correlation. 4,207,002, Cl. 356-375.000.

Garanin, Ernest M.: *See—*
Berber, Viktor A.; Pervushin, Evgeny S.; Jushunev, Marat N.; Garanin, Ernest M.; Kholin, Vladimir G.; and Murtazin, Khafiz M., 4,206,650, Cl. 73-421.00R.

Garascia, David C., to American Sunroof Corporation. Gasket for vehicle lamp. 4,206,927, Cl. 277-12.000.

Gardner, Edward B., to Emhart Industries, Inc. Refrigeration system control method and apparatus. 4,206,612, Cl. 62-128.000.

Gardner, Paul J., to Bendix Corporation, The. Single bed separator apparatus. 4,207,084, Cl. 55-181.000.

Gardner, Tommy R.: *See—*
Ford, William G. F.; and Gardner, Tommy R., 4,207,193, Cl. 252-8.55B.

Gardocki, Joseph F., to McNeilab, Inc. Analgesic potentiation. 4,207,340, Cl. 424-317.000.

Garner, Janet S. Joined dolls. 4,206,568, Cl. 46-153.000.

Garrett Corporation, The: *See—*
Silver, Alexander, 4,207,485, Cl. 310-104.000.

Gautreaux, Gloria A.: *See—*
Blanchard, Eugene J.; Bruno, Joseph S.; and Gautreaux, Gloria A., 4,207,068, Cl. 8-493.000.

Gay, Walter A., to Olin Corporation. Thiolcarbamate derivatives of 3-trihalomethyl-1,2,4-thiadiazoles and their use as herbicides. 4,207,089, Cl. 71-90.000.

Gebrueder Buehler AG: *See—*
Geiger, Armin, 4,206,879, Cl. 241-46.110.

Geiger, Armin, to Gebrueder Buehler AG. Agitator mill. 4,206,879, Cl. 241-46.110.

Gelhaar, Rolf; and Schwarzkopf, Werner, to Metallgesellschaft Aktiengesellschaft. Diffuser assembly and method of assembling. 4,207,083, Cl. 55-129.000.

General Dynamics Corportation: *See—*
Shores, Marvin W., 4,206,707, Cl. 102-46.000.

General Dynamics Pomona Division: *See—*
Reavill, Joseph A., 4,206,542, Cl. 29-877.000.

General Electric Company: *See—*
Goossens, John C., 4,207,357, Cl. 427-162.000.
Hatch, Burton D., 4,207,486, Cl. 310-178.000.
Karger, Arieh M.; and Fridrich, Elmer G., 4,207,541, Cl. 331-94.50P.
Olander, Walter K., 4,207,406, Cl. 525-391.000.
Reed, William G.; Mazer, Jack S.; and Shade, Russell L., Jr., 4,206,802, Cl. 165-1.000.

General Foods Corporation: *See—*
Wauters, Ronald P.; Cochran, Stuart A.; and Kenyon, Ralph E., 4,207,346, Cl. 426-19.000.

General Microwave Corporation: *See—*
Hopfer, Samuel, 4,207,518, Cl. 324-95.000.

General Motors Corporation: *See—*
Clarke, David R., 4,206,801, Cl. 164-401.000.
Diehl, Rodney A.; Douglas, Henry; and Watson, Robert W., 4,206,953, Cl. 308-9.000.
Gara, Aaron D.; and Lewis, Robert W., 4,207,002, Cl. 356-375.000.
Harrod, Edward L., 4,206,907, Cl. 267-8.00R.
Kuziak, William R., Jr.; Razinsky, Elias H.; and Yu, Mason K., 4,206,596, Cl. 60-39.16R.
Maertens, Donald E., 4,206,946, Cl. 297-379.000.
Magyar, Joseph J., 4,206,888, Cl. 242-107.700.
Manz, David F., 4,206,662, Cl. 74-710.500.
Miles, Donald L.; and Reinke, Paul E., 4,206,735, Cl. 123-139.0AW.
Pol, Kenneth J., 4,206,800, Cl. 164-401.000.
Sheppard, Thomas H.; and Paddison, Richard L., 4,206,935, Cl. 280-723.000.
Teerman, Richard F., 4,206,635, Cl. 73-119.00A.
Trenne, Myron U., 4,206,728, Cl. 123-90.120.

General Signal Corporation: *See—*
Stanton, James L., Jr.; and Kipple, William H., 4,207,275, Cl. 261-93.000.

George Banta Company, Inc.: *See—*
Huston, Donald B., 4,206,937, Cl. 282-27.500.

Georgia-Pacific Corporation: *See—*
DeLuca, Raymond F.; and Jespersen, Paul W., 4,206,858, Cl. 225-96.000.

Gerry, Martin E. High power AC ignition system. 4,206,736, Cl. 123-148.00E.

Gerry, Martin E. Modulated ignition system. 4,206,737, Cl. 123-148.00E.

Gerstenberg, Roy W.: *See—*
Barnes, William; Gerstenberg, Roy W.; Kropa, Gomer E.; and Oakes, Thomas M., 4,206,882, Cl. 241-221.000.

Getto, Elmar: *See—*
Oppenlaender, Knut; Kindscher, Wolfgang; and Getto, Elmar, 4,207,285, Cl. 422-16.000.

Geuenich, Matthias, to Eberhard Hoesch & Sohne GmbH & Co. Filter plate assembly for a filter press. 4,207,189, Cl. 210-227.000.

Ghosh, Asoke K.: *See—*
Tam, Sebastian Y. K.; and Ghosh, Asoke K., 4,207,499, Cl. 315-111.100.

Ghosh, Suhas: *See—*
Bartholomay, William G.; Couturier, Gordon W.; Ghosh, Suhas; and Winn, Melvin, 4,207,433, Cl. 370-13.000.

Giben Impianti S.p.A.: *See—*
Benuzzi, Gino, 4,206,670, Cl. 83-404.200.

Gibson, Sandra F.: *See—*
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 4,207,394, Cl. 435-34.000.

Gibson, Walter G.; and Liu, Frank C., to RCA Corporation. AFT Circuit. 4,207,597, Cl. 358-195.100.

Gibu, Yoshitaka: *See—*
Matsugu, Youichi; and Gibu, Yoshitaka, 4,206,551, Cl. 33-434.000.

Giger, Robert J., to RCA Corporation. Surge protection of full-wave rectifier by biased ionization tube. 4,207,603, Cl. 361-56.000.

Gilbert, William H.: *See—*
Wedding, Leon E.; and Gilbert, William H., 4,207,626, Cl. 367-142.000.

Gilgen, James K. Solar operated chemical heat pump. 4,206,745, Cl. 126-271.100.

Gilkeson, Robert F.; and Blose, John B. User electric energy consumption apparatus. 4,207,557, Cl. 340-178.000.

Gilles, Jack C., to B. F. Goodrich Company, The. Hydroxyl-terminated liquid polymers and process for preparation thereof using a mixture of at least one hydroxyl-containing disulfide and at least one hydroxyl-containing trisulfide. 4,207,238, Cl. 260-326.250.

Gilman, Paul B., Jr.; and Koszelak, Thaddeus D., to Eastman Kodak Company. Photographic print-out silver halide process. 4,207,103, Cl. 430-494.000.

Gindler, E. Melvin, to Sherwood Medical Industries Inc. Uric acid standard solutions. 4,207,203, Cl. 252-408.000.

Girella, Albert: *See—*
Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, 4,207,032, Cl. 431-150.000.

Girgensohn, Bjoern: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, 4,207,243, Cl. 260-347.500.
Gitlin, Robert; and Mayerhoff, Evan, to American Aerospace Controls, Inc. DC Current level detector for monitoring a pitot tube heater and associated method. 4,207,566, Cl. 340-664.000.
Glocker, Edwin M. Gravity flow continuous mixer. 4,207,009, Cl. 366-337.000.
Glomb, John W.; and Closset, Gerard P., to Westvaco Corporation. Method for adding moisture to a traveling web. 4,207,143, Cl. 162-207.000.
Goard, Howard W.: *See*—
McCarthy, William C.; and Goard, Howard W., 4,207,179, Cl. 210-7.000.
Godfrey, Darryl A., to Eastman Kodak Company. Heat curable hot-melt adhesives containing modified polyethylene. 4,207,220, Cl. 260-27.00R.
Goeke, Eberhard: *See*—
Preusser, Gerhard; Dutz, Karl-Heinz; and Goeke, Eberhard, 4,207,081, Cl. 48-210.000.
Goel, Jitendra, to RCA Corporation. Temperature compensation circuit. 4,207,538, Cl. 330-277.000.
Goldfarb, Adolph E. Liquid activity toy. 4,206,565, Cl. 46-41.000.
Goldfarb, Adolph E.; Benkoe, Erwin, deceased (by Benkoe, Elisabeth, executrix); Everitt, Delmar K.; Chesley, Ronald F.; and Frierdich, Richard D., to Goldfarb, Adolph E.; and Benkoe, Elisabeth, executrix for the estate of Erwin Benkoe. Board game with chance operation and random striker. 4,206,925, Cl. 273-248.000.
Goldstein, Sanders: *See*—
Pomerantz, Daniel I.; Spofford, Walter R., Jr.; and Goldstein, Sanders, 4,206,552, Cl. 34-23.000.
Gonzalez, Ricardo; Sumner, Charles A.; and Sanctuary, Robert E., to Worcester Controls Corporation. Cantilever beam positioner for valve actuators. 4,206,686, Cl. 91-386.000.
Gooch, Sherwin J. Cybernetic music system. 4,206,675, Cl. 84-1.030.
Goodman, Colin H. L., to International Standard Electric Corporation. Infra-red light emissive devices. 4,207,122, Cl. 148-33.400.
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., to Libbey-Owens-Ford Company. Solar energy collector with collapsible supporting structure. 4,206,748, Cl. 126-444.000.
Goodrich, Judson E., to Chevron Research Company. Rosin acid esters as stabilizers for asphalt premix. 4,207,231, Cl. 260-104.000.
Goodyear Tire & Rubber Company, The: *See*—
Anderson, John E.; and Hildenbrand, Ernest G., 4,207,264, Cl. 568-385.000.
Bartell, Jeffrey M., 4,206,938, Cl. 285-2.000.
Ray, Gilbert W.; and Brinkley, Max D., 4,206,798, Cl. 157-13.000.
Goossens, John C., to General Electric Company. Method for coating a polycarbonate article with silica filled organopolysiloxane. 4,207,357, Cl. 427-162.000.
Gordon, Thomas C., to Ford Motor Company. Apparatus and method for testing and controlling manufacture of a vehicle electrical system. 4,207,610, Cl. 364-580.000.
Gordon, Thomas C., to Ford Motor Company. Apparatus and method for calibrated testing of a vehicle electrical system. 4,207,611, Cl. 364-580.000.
Gosney, James A.: *See*—
Gosney, John G.; and Gosney, James A., 4,206,684, Cl. 91-173.000.
Gosney, John G.; and Gosney, James A. Hydraulic jack. 4,206,684, Cl. 91-173.000.
Goto, Atsuo, to Olympus Optical Co., Ltd. Reproducing objective for video disks. 4,206,977, Cl. 350-220.000.
Gould, Eugene L. Apparatus and method for making ophthalmic determinations. 4,206,549, Cl. 33-200.000.
Gould, Herbert J., to International Rectifier Corporation. Schottky device and method of manufacture using palladium and platinum intermetallic alloys and titanium barrier. 4,206,540, Cl. 29-590.000.
Gould Inc.: *See*—
Kussy, Frank W.; Haydu, John L.; and Heberlein, G. Erich, Jr., 4,207,602, Cl. 361-24.000.
Oehrlein, Willard J.; and Engman, James C., 4,207,390, Cl. 429-179.000.
Robins, Charles T., 4,207,449, Cl. 200-308.000.
Gouley, Claude A., to Societe Nationale Industrielle Aerospatiale. Device for simulating bearing signals of the tacan type. 4,207,570, Cl. 343-106.00R.
Goyarts, Wynand M. J. M., to Clark Equipment Company. Mobile aerial tower. 4,206,833, Cl. 182-2.000.
Graafmann, Jurgen; and Setzer, Eberhart, to Wavin B.V. Plastic tube part, particularly thermoplastic tube part. 4,206,785, Cl. 138-149.000.
Graham, Alan J.; and Ibbotson, Arthur, to Imperial Chemical Industries Limited. Chemical process for reducing the cyclohexanone content of crude aniline. 4,207,262, Cl. 260-582.000.
Graham, Peter B.; and Butland, Roger J., to Del Technology Limited. Tuned circuits. 4,207,548, Cl. 333-225.000.
Grandadam, Jean A.; Benet, Daniel; and Jobard, Alain, to Roussel Uclaf. Device for the administration of medicinal substances. 4,206,757, Cl. 128-260.000.
Grandi, Robert G.: *See*—
Haglund, John H.; and Grandi, Robert G., 4,207,457, Cl. 219-381.000.
Grant, Charles H., to Energy Sciences and Consultants, Inc. Pre-mix for explosive composition and method. 4,207,125, Cl. 149-109.400.
Grant, George N.; and Campbell, Douglas B., to Bepex Corporation. Cheese curd processing apparatus and method. 4,206,696, Cl. 99-457.000.
Grant, Robert L.: *See*—
Morris, John R.; and Grant, Robert L., 4,207,594, Cl. 358-107.000.
Graphic Controls Corporation: *See*—
Pelensky, Joseph; and Tallerico, William A., 4,207,581, Cl. 346-139.00R.
Grasso, Giacomo, to FIAT Societa per Azioni. Heat recovery apparatus. 4,206,875, Cl. 237-55.000.
Graves, Daniel F.: *See*—
Cheng, Tai C.; Fieldhouse, John W.; Oberster, Arthur E.; and Graves, Daniel F., 4,207,403, Cl. 521-180.000.
Graves, James: *See*—
Baldassarre, Richard; and Graves, James, 4,206,563, Cl. 46-1.00E.
Gray, Martin D.: *See*—
Barton, William M., Jr.; and Gray, Martin D., 4,206,890, Cl. 242-184.000.
Green, Terence C.: *See*—
Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., 4,207,572, Cl. 343-113.00R.
Greene, Carl B.; and Greene, Carl B., III. Vehicle body end cap and method of forming same. 4,206,715, Cl. 113-116.00F.
Greene, Carl B., III: *See*—
Greene, Carl B.; and Greene, Carl B., III, 4,206,715, Cl. 113-116.00F.
Gregory, C. Albert; and Gregory, Willis H. Agricultural distributor having a control valve for plural outlets. 4,206,857, Cl. 222-625.000.
Gregory, Randy K. Fuel gasifying system. 4,206,733, Cl. 123-133.000.
Gregory, Willis H.: *See*—
Gregory, C. Albert; and Gregory, Willis H., 4,206,857, Cl. 222-625.000.
Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., to Realty & Industrial Corporation. Electronic typographical display device with justification feature. 4,207,612, Cl. 364-900.000.
Griffith, Joseph W.: *See*—
Welch, Robert B.; and Griffith, Joseph W., 4,206,831, Cl. 181-159.000.
Grimaldo, Samuel, to American Machine & Hydraulics, Inc. Back shoe for a tube bender. 4,206,629, Cl. 72-389.000.
Grimmer, Paul D.: *See*—
McKechnie, John C.; and Grimmer, Paul D., 4,206,633, Cl. 73-105.000.
Griparis, Andrew G. Dental flosser. 4,206,774, Cl. 132-92.00R.
Grisch, William E., to Armco Inc. Method for molding reinforced polymeric articles. 4,207,282, Cl. 264-257.000.
Groff, Gaylord L., to Minnesota Mining and Manufacturing Company. Flame-retardant film. 4,207,374, Cl. 428-261.000.
Groh, Wolfgang: *See*—
Ladenberger, Volker; Bronstert, Klaus; Fahrbach, Gerhard; and Groh, Wolfgang, 4,207,409, Cl. 525-338.000.
Groos, Horst H.; Richardt, Urban; and Hoffmeier, Siegfried, to Schloemann-Siemag Aktiengesellschaft. Extrusion press for extruding tubes. 4,206,626, Cl. 72-265.000.
Grossan, Murray. Jet ear irrigation system. 4,206,756, Cl. 128-229.000.
Grosser, Frank R.: *See*—
Scardera, Michael; and Grosser, Frank R., 4,207,421, Cl. 568-625.000.
Grube, Erwin, to Durkoppwerke GmbH. Coupling device for monorail vehicles. 4,206,850, Cl. 213-175.000.
Gruber, Bruce A.: *See*—
Lorenz, Donald H.; and Gruber, Bruce A., 4,207,253, Cl. 260-465.00D.
Gruber, Henry T.: *See*—
Flora, John H.; and Gruber, Henry T., 4,207,520, Cl. 324-238.000.
Grudkowski, Thomas W.; Montress, Gary K.; and Reeder, Thomas M., to United Technologies Corporation. Linear SAW signal processor. 4,207,545, Cl. 333-150.000.
Grudkowski, Thomas W., to United Technologies Corporation. Phase and amplitude programmable internal mixing SAW signal processor. 4,207,546, Cl. 333-152.000.
Grumman Aerospace Corporation: *See*—
Jost, Steven R., 4,206,979, Cl. 350-342.000.
Grumman Flexible Corporation: *See*—
McKee, Laird W., 4,206,934, Cl. 280-711.000.
GTE Automatic Electric Laboratories Incorporated: *See*—
Miille, Gerard J., 4,207,534, Cl. 328-147.000.
Tosuntikool, Nam; and Yapp, Robert, 4,207,436, Cl. 179-16.0EA.
GTE Products Corporation: *See*—
Amstutz, O. Wendell; Dickinson, William A.; and Kreidler, James F., 4,206,534, Cl. 29-25.130.
Guainazzi, Giancarlo; and Albini, Italo, to Chem-Plast S.p.A. Heat melting adhesive. 4,207,217, Cl. 260-18.00N.
Guillem, Guy; Vinci, Rene A.; and Roche, Gilbert C. Sports racquet. 4,206,917, Cl. 273-73.00E.
Guimond, Roy A.: *See*—
Gulliksen, John E.; Guimond, Roy A.; Martino, Mark S.; and Collins, Michael E., 4,207,606, Cl. 362-106.000.
Gulliksen, John E.; Guimond, Roy A.; Martino, Mark S.; and Collins, Michael E., to Koehler Manufacturing Company. Luminaire apparatus and improved means for connecting same with a power source. 4,207,606, Cl. 362-106.000.
Gulliksen, John E., to Koehler Manufacturing Company. Luminaire apparatus for reflecting radiant energy and methods of controlling characteristics of reflected radiant energy. 4,207,607, Cl. 362-282.000.
Gunther, Philip B.; and Nikitopoulos, Robert, to P. R. Mallory & Co. Inc. Solid state cells. 4,207,389, Cl. 429-164.000.
Gurevitz, Michael J. Shelf storage box. 4,206,869, Cl. 229-34.00R.

Gusev, Alexandr P.: *See*—
Zatsepin, Nikolai N.; and Gusev, Alexandr P., 4,207,519, Cl. 324-235.000.

Gut Boucher, Raymond M., to Biophysics Research & Consulting Corporation. Seeded gas plasma sterilization method. 4,207,286, Cl. 422-21.000.

Gybro Industries Ltd.: *See*
Vegh, George, 4,206,625, Cl. 72-181.000.

Gyorgy, Ernst M.; and Schnettler, Frank J., to Bell Telephone Laboratories, Incorporated. Bubble device containing a ferrite biasing magnet. 4,207,613, Cl. 365-27.000.

Haag, Ron: *See*—
Burridge, Len, Jr., 4,206,842, Cl. 206-45.190.

Haak, Willard J.; Marsden, Howard A.; and Moots, Paul C., to Caterpillar Tractor Co. Overrunning load control for hydraulic motors. 4,206,688, Cl. 91-452.000.

Haake, Hinrich; Stampfer, Michael; Meier, Hubert; Franke, Reimar; Dalmer, Hans-Jurgen; Ott, Ernst; and Kienle, Josef, to Kluckner-Humboldt-Deutz AG (Zweigniederlassung Fahr). Corn harvester. 4,206,581, Cl. 56-14.600.

Haar, Wilhelm: *See*—
Meinhold, Henner; Haar, Wilhelm; and Fischer, Wilfried, 4,207,386, Cl. 429-62.000.

Haase, Jaroslav: *See*—
Kaiser, Leo E.; Scheidegger, Hans; and Haase, Jaroslav, 4,207,184, Cl. 210-37.00R.

Habara, Kohei: *See*—
Okada, Keiji; and Habara, Kohei, 4,207,435, Cl. 370-68.000.

Habisohn, Victor J. Variable speed motor control system. 4,207,508, Cl. 318-742.000.

Haefner, Donald R.: *See*—
Taylor, Dennis O.; Reid, David L.; Kincaid, Clarence E.; and Haefner, Donald R., 4,206,634, Cl. 73-119.00A.

Haeuptli, Walter, to Homax AG. Suction pump. 4,206,531, Cl. 15-341.000.

Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, to Consortium f/ r Elektrochemische Industrie GmbH. Organosiloxanes with SiC-bonded groups and a process for preparing the same. 4,207,246, Cl. 556-439.000.

Haga, Hiroshi; Shigeoka, Ritsuo; and Yamauchi, Takafumi, to Nippon Suisan Kabushiki Kaisha. Method for processing fish contaminated with sporozoa. 4,207,354, Cl. 426-574.000.

Haglund, John H.; and Grandi, Robert G., to Kanthal Corporation, The. Porcupine wire coil electric resistance fluid heater. 4,207,457, Cl. 219-381.000.

Hahn, Alfred; Gall, Arthur; and Jager, Wolfgang, to Siemens Aktiengesellschaft. Film changer platform for a sheet film camera. 4,206,989, Cl. 354-182.000.

Haikkala, Pekka O.; and Lindahl, Jonas A. I., to Mo och Domsjo Aktiebolag. Method for producing groundwood pulp. 4,207,139, Cl. 162-23.000.

Halbert, Thomas R., to Exxon Research & Engineering Co. Organometallic intercalates of metal chalcogenohalides. 4,207,245, Cl. 260-429.500.

Halcon Research & Development Corporation: *See*—
Winnick, Charles N., 4,207,424, Cl. 585-357.000.

Hall, James R.; and Whallon, William P., Jr., to Bendix Corporation, The. Electrical conductor having an integral electrical contact. 4,206,958, Cl. 339-49.00R.

Halliburton Company: *See*—
Blackman, Bruce A., 4,206,810, Cl. 166-336.000.
Ford, William G. F.; and Gardner, Tommy R., 4,207,193, Cl. 252-8.55B.

Hallworth, Gerald W.; and Clough, David, to Allen & Hanburys Limited. Device for dispensing medicaments. 4,206,758, Cl. 128-203.150.

Halmann, Martin M.: *See*—
Vofsi, David; Halmann, Martin M.; and Yanai, Saul, 4,207,417, Cl. 536-117.000.

Hamaker, Ralph A.: *See*—
Silverberg, Morton; and Hamaker, Ralph A., 4,206,994, Cl. 355-3.0BE.

Hamanishi, Yoshinari; and Nakamura, Soichi, to Nippon Kogaku K.K. Rear conversion lens. 4,206,971, Cl. 350-183.000.

Hamilton, James P.: *See*—
Beacham, Harry H.; and Hamilton, James P., 4,207,225, Cl. 260-30.60R.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Apparatus for printing and applying pressure sensitive labels. 4,207,131, Cl. 156-384.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Hand-held labeler. 4,207,132, Cl. 156-384.000.

Hamisch, Paul H., Jr., to Monarch Marking Systems, Inc. Composite label web. 4,207,365, Cl. 428-40.000.

Hamlin, Edmund M., Jr.: *See*—
Falck, Peter L.; and Hamlin, Edmund M., Jr., 4,207,505, Cl. 318-595.000.

Hammar, Karl E., to ASEA Aktiebolag. On-load tap changer switch assembly. 4,207,445, Cl. 200-11.0TC.

Hammond, George B.: *See*—
Hammond, Leonard B.; and Hammond, George B., 4,206,536, Cl. 29-402.110.

Hammond, Leonard B.; and Hammond, George B., to Premier Industrial Corporation. Repair panel for automobile pinchwelds and method of using same. 4,206,536, Cl. 29-402.110.

Hamuro, Junji: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.

Hanano, Naomasa: *See*—
Nakamura, Hiroshi; Hanano, Naomasa; and Iguchi, Kazuo, 4,207,459, Cl. 455-513.000.

Hanes, Maurice H.; and Lowry, Lewis R., Jr., to Electric Power Research Institute, Inc. Package for light-triggered thyristor. 4,207,587, Cl. 357-74.000.

Hannon, Martin J.; and Forschirm, Alex S., to Celanese Corporation. Method of powder coating a glass container. 4,207,359, Cl. 427-195.000.

Hanson, Francis V.: *See*—
Butter, Stephen A.; Hanson, Francis V.; and Sherry, Howard S., 4,207,248, Cl. 260-449.60R.

Hanson, Raymond A. Movable belt conveyor assembly. 4,206,840, Cl. 198-301.000.

Hanson, Shelley J.; and Bay, Charles L. Keying improvement for clarinets. 4,206,680, Cl. 84-382.000.

Harada, Masaki; and Mikami, Tokuhiro, to U.S. Philips Corporation. Optical motional feedback. 4,207,430, Cl. 179-1.00F.

Hardesty, William R.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Hardesty, William R.; and Lanzilliotti, Harry V., 4,207,458, Cl. 219-384.000.

Harer, Helmut: *See*—
Irschik, Heinz; Kipp, Dieter; and Harer, Helmut, 4,207,503, Cl. 318-139.000.

Hark, William B.; Baker, Peter J.; Headford, Alan; and Jacobs, Barry E. A., to British Hydromechanics Research Association, The. Fluid pressurizing station for a pipeline conveyor. 4,207,018, Cl. 406-105.000.

Harkness, Lawrence N.: *See*—
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Harrison, Ian T.: *See*—
Fried, John H.; and Harrison, Ian T., 4,207,241, Cl. 260-345.70R.

Harrison, Ronald P. Trailer axle re-centering stand. 4,206,911, Cl. 269-296.000.

Harrod, Edward L., to General Motors Corporation. Suspension strut with pneumatic spring. 4,206,907, Cl. 267-8.00R.

Harte, Jan: *See*—
Nauta, Harry H. K.; Kok, Jan W.; and Harte, Jan, 4,207,296, Cl. 423-61.000.

Hartmann, Achim; Kulling, Achim; Schinkitz, Dieter; and Klein, Edgar, to Kronos Titan GmbH. Process for the manufacture of an aqueous iron (III)-chloride-sulfate solution. 4,207,201, Cl. 252-191.000.

Harwood, Leopold A., to RCA Corporation. Automatic kinescope bias control circuit. 4,207,592, Cl. 358-34.000.

Hashimoto, Masashi: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.

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Hashimoto, Shinsuke: *See*—
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Haskell, Donald M.: *See*—
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Hasselberg, Herbert: *See*—
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Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, to Nippon Electric Co., Ltd.; and Nippon Hoso Kyokai. Microwave tubes provided with permanent magnet type magnetic circuits. 4,207,494, Cl. 315-5.350.

Hatch, Burton D., to General Electric Company. Method and apparatus for liquid metal circulation in an acyclic machine. 4,207,486, Cl. 310-178.000.

Hatcher, John C., to Cole Manufacturing Company. Tool bar arrangement. 4,206,815, Cl. 172-311.000.

Hatters, Harry D.; and Stoll, Joseph M., to Jones & Laughlin Steel Corporation. Method to control carbon formation and temperature in the free space of coke oven chambers. 4,207,145, Cl. 201-41.000.

Hayama, Hideki, to Furukawa Denchi Kabushiki Kaisha. Closed type alkaline storage battery. 4,207,385, Cl. 429-56.000.

Hayashi, Masaki; Arai, Yoshinobu; Shimoji, Katsuichi; Konishi, Yoshitaka; Ohuchida, Shuichi; and Hashimoto, Shinsuke, to Ono Pharmaceutical Co., Ltd. Prostaglandin I_2 analogues. 4,207,332, Cl. 424-285.000.

Hayashi, Masanobu: *See*—
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Haydu, John L.: *See*—
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Hayes, Fay A.; and Hayes, Leonard L. Inplace gasket belling method and apparatus. 4,206,538, Cl. 29-450.000.

Hayes, Leonard L.: *See*—
Hayes, Fay A.; and Hayes, Leonard L., 4,206,538, Cl. 29-450.000.

Hayward, Walter W. Tumbling apparatus. 4,206,573, Cl. 51-164.100.
Headford, Alan: *See*—
Hark, William B.; Baker, Peter J.; Headford, Alan; and Jacobs, Barry E. A., 4,207,018, Cl. 406-105.000.
Heberle, Hansjorg; and Rudert, Wolfgang, to BBC Aktiengesellschaft. Gas dynamic wave machine. 4,206,607, Cl. 60-611.000.
Heberlein, G. Erich, Jr.: *See*—
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Hebert, Raymond T.: *See*—
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Heeren, Hermann; and Kraetschmer, Liselotte, to Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft. Heat exchanger. 4,206,738, Cl. 165-148.000.
Heeren, Richard H., to Teletype Corporation. Logic array having improved speed characteristics. 4,207,616, Cl. 365-189.000.
Heighton, Douglas C.: *See*—
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Heinzerling, Jurgen: *See*—
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Heisner, Donald N.; and Bentivegna, Charles R., to Monsanto Company. Tire inspection system. 4,207,470, Cl. 250-358.00T.
Heitmann, Arthur C.; and Eisenberg, Arnold J., to Owens-Corning Fiberglas Corporation. Stream feeder apparatus. 4,207,086, Cl. 65-1.000.
Helfert, Herbert: *See*—
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Heller, Dieter: *See*—
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Hellige GmbH: *See*—
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Helminiak, Thaddeus E.; Benner, Charles L.; Arnold, Fred E.; and Husman, George E., to United States of America, Air Force. Aromatic heterocyclic polymer alloys and products produced therefrom. 4,207,407, Cl. 525-425.000.
Hemmelgarn, Donald J., to Minster Machine Company, The. Retracting bolster for a press. 4,206,699, Cl. 100-53.000.
Hemmelgarn, Donald J., to Minster Machine Company, The. Lock mechanism for press shutheight adjustment. 4,206,701, Cl. 100-257.000.
Hemmi, Keiji: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.
Hendrix, Tony D., to United Technologies Corporation. Foot pedal force transducer. 4,206,636, Cl. 73-132.000.
Hepmi, Zen-ichi; Arimoto, Shuichi; Kotaki, Akira; and Kitano, Takafumi, to Mitsui Toatsu Chemicals, Incorporated. Anti-ulcer pharmaceutical composition containing inositol hexasulfate or an alkaline metal salt thereof as active ingredient. 4,207,339, Cl. 424-315.000.
Herbstman, Sheldon; and Dorn, Peter, to Texaco Inc. Primary aliphatic hydrocarbon amino alkylene-substituted asparagine and a motor fuel composition containing same. 4,207,079, Cl. 44-71.000.
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Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,207,375, Cl. 428-286.000.
Hermle, Eduard. Electronic controller. 4,207,507, Cl. 318-665.000.
Herr, Robert W., to Bowmar Instrument Corporation. Rotary ratchet mechanism. 4,206,658, Cl. 74-128.000.
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Herrigel, Howard R., to Resources Conservation Company. Prevention of solute deposition fouling in membrane processes. 4,207,183, Cl. 210-23.00H.
Hess, John S., Jr., to Power Control Corporation. Automatic battery charger. 4,207,513, Cl. 320-23.000.
Hettche, Albert: *See*—
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Heyboer, Nico, to Akzona Incorporated. Catalytic oxidation of formamides to form isocyanates. 4,207,251, Cl. 260-453.00P.
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Hibi, Kiyokatsu: *See*—
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.
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Hinds, Robert J., to Chevron Research Company. Method for purifying liquids. 4,207,185, Cl. 210-44.000.
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Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., to Southwest Research Institute. Sky wave DF antenna system. 4,207,572, Cl. 343-113.00R.
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Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, to Fuji Photo Film Co., Ltd. Method for controlling halogen ion concentration in a photographic processing solution. 4,207,157, Cl. 204-180.00P.
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Hirono, Shuichiro, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Process for recovering uranium from wet-process phosphoric acid. 4,207,294, Cl. 423-10.000.
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Kawada, Shigeki; Fujioka, Yoshiki; and Hirota, Mitsuhiko, 4,207,504, Cl. 318-561.000.
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Hoechst Aktiengesellschaft: *See*—
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Honeywell Inc.: *See*—
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Wilwerding, Dennis J., 4,207,461, Cl. 250-201.000.
Honig, Milton L.; and Weil, Edward D., to Stauffer Chemical Company. Bis(2,2,2-trihydroxymethyl ethane) methylphosphonate. 4,207,271, Cl. 260-953.000.
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Hood, Maxwell G., to Fowler Rex Pty. Ltd. Reclamation of unset concrete aggregates. 4,207,176, Cl. 209-44.000.
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Hopfer, Samuel, to General Microwave Corporation. Broadband radiation detector with diode elements. 4,207,518, Cl. 324-95.000.
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Horodysky, Andrew G., to Mobil Oil Corporation. Sulfurized olefin adducts of dihydrocarbyl phosphites and lubricant compositions containing same. 4,207,195, Cl. 252-46.600.
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Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.
Horwitt, Laurence G.; and Mattis, Donald J., to Sun Chemical Corporation. Automatic electric cigar lighter with base switch. 4,207,455, Cl. 219-265.000.
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Howell, Earl A., Jr.; and Howell, Earl A., III. Trick windmill novelty. 4,206,913, Cl. 272-27.00B.
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Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, to Boehringer-Mannheim GmbH. Hypoglycaemically and hypolipidaemically active derivatives of phenylacetic acid. 4,207,341, Cl. 424-319.000.
Hudak, Joseph M.; Zielinski, Gerald L.; and Messenger, Charles G., to United States of America, Air Force. Low power frequency modulated hybrid fiber optic data acquisition system. 4,207,460, Cl. 455-612.000.
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Wright, John B.; and Schad, Robert D., 4,207,051, Cl. 425-556.000.
Husman, George E.: *See*—
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Hussey, Charles L.: *See*—
Erbacher, John K.; Hussey, Charles L.; and King, Lowell A., 4,207,388, Cl. 429-112.000.
Husted, Royce H., to Saroy Engineering. Power driven ski-bob with self energizing frame. 4,206,828, Cl. 180-184.000.
Huston, Donald B., to George Banta Company, Inc. Spirit duplicating master and method of making the same. 4,206,937, Cl. 282-27.500.
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Yamamoto, Keizo; and Austin, Charles C., 4,207,479, Cl. 307-308.000.
Hyde, Thomas G.: *See*—
Randell, Donald R.; Hyde, Thomas G.; Lamb, Frank; Clubley, Brian G.; and Davis, Boyce I. D., 4,207,224, Cl. 260-30.60R.
Ibbotson, Arthur: *See*—
Graham, Alan J.; and Ibbotson, Arthur, 4,207,262, Cl. 260-582.000.
Ibuki, Koji, to Mitsubishi Denki Kabushiki Kaisha. Gas interrupter having narrow and wide arc passages. 4,207,447, Cl. 200-148.00R.
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; Hebert, Raymond T.; and King, Edward A., to Bendix Corporation, The. Lumber inspection and optimization system. 4,207,472, Cl. 250-563.000.
Iguchi, Kazuo: *See*—
Nakamura, Hiroshi; Hanano, Naomasa; and Iguchi, Kazuo, 4,207,459, Cl. 455-513.000.
Ikemori, Keiji, to Canon Kabushiki Kaisha. Retrofocus type wide-angle objective. 4,206,973, Cl. 350-214.000.
Ikenaga, Toshio; and Chisaki, Tatsu. Top-shaped lime kiln. 4,207,061, Cl. 432-98.000.
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Imai, Tamotsu, to UOP Inc. Preparation of tertiary amines. 4,207,260, Cl. 260-577.000.
Imperial Chemical Industries Limited: *See*—
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,207,278, Cl. 264-46.400.
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Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,207,350, Cl. 426-334.000.
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Beretta, Germano; Seveso, Cesare; and Tuci, Giulio, 4,207,427, Cl. 174-26.00R.
Bottasso, Franco; and Bertoldo, Giorgio, 4,207,133, Cl. 156-415.000.
Ingenieursbureau Het Noorden B.V.: *See*—
Brink, Fredericus J., 4,206,847, Cl. 211-1.300.
Ingenjorsfirma Eifa AB: *See*—
Lydmar, Arne, 4,206,956, Cl. 312-257.0SK.
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Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR: *See*—
Safonnikov, Anatoly N.; Sinchuk, Anatoly G.; and Antonov, Anatoly V., 4,207,454, Cl. 219-73.100.
Institut Francais du Petrole: *See*—
Chauvin, Yves; Commereuc, Dominique; and Tkatchenko, Igor, 4,207,249, Cl. 260-449.60M.
Courty, Philippe; Martino, Germain; and Le Page, Jean-Francois, 4,207,169, Cl. 208-124.000.
Su, Cyril K. M.; and Verwaerde, Michel, 4,206,593, Cl. 60-39.040.
Intel Corporation: *See*—
Mar, Jerry, 4,207,615, Cl. 365-95.000.
Interliz Anstalt: *See*—
Kunkel, Wolfgang, 4,206,723, Cl. 122-22.000.
International Business Machines Corporation: *See*—
Aboelfotoh, Mohamed O., 4,207,488, Cl. 313-221.000.
Clark, Gary A.; Johnson, Frederick W.; and Promis, George G., Jr., 4,206,996, Cl. 355-14.00C.

Gaitten, Ronald E.; Jachimiak, Paul D.; Machmer, James A.; and Wittwer, Alvin L., 4,207,059, Cl. 432-60.000.
Luiz, Fernando A.; Snyder, Harlan C.; and Sorg, John H., Jr., 4,207,609, Cl. 364-200.000.
Pascoe, Robert A., 4,207,011, Cl. 400-279.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,207,214, Cl. 252-522.00R.
International Harvester Company: *See*—
Horstmann, Bernhard; and Wesemeier, Reinhard, 4,206,661, Cl. 74-606.00R.
Johnson, Orlin W.; and Kerber, Dathan R., 4,206,584, Cl. 56-15.800.
McMillen, Russell G.; and Leitzman, Noel E., 4,206,826, Cl. 180-77.0TC.
Molzahn, Herbert W.; and Stowell, Ronald, 4,206,582, Cl. 56-15.800.
Week, Robert D.; Johnson, Orlin W.; and Kerber, Dathan R., 4,206,583, Cl. 56-15.800.
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Vermilyea, Barry L.; Crossen, Fred W., Jr.; and Mohar, Douglas D., 4,207,348, Cl. 426-95.000.
International Nickel Co., Inc., The: *See*—
Shaw, Stuart W., 4,207,098, Cl. 75-171.000.
International Rectifier Corporation: *See*—
Gould, Herbert J., 4,206,540, Cl. 29-590.000.
International Standard Electric Corporation: *See*—
Goodman, Colin H. L., 4,207,122, Cl. 148-33.400.
Janssens, Julian L. G., 4,207,437, Cl. 179-18.0ES.
Reich, Hans; and Bajohr, Ekkehard, 4,207,598, Cl. 358-257.000.
International Telephone and Telegraph Corporation: *See*—
Bartholomay, William G.; Couturier, Gordon W.; Ghosh, Suhas; and Winn, Melvin, 4,207,433, Cl. 370-13.000.
Saxon, Bruce R., 4,207,439, Cl. 179-99.0LC.
Steensma, Peter D., 4,207,561, Cl. 340-600.000.
Inui, Taiji: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,207,313, Cl. 424-181.000.
Iowa Beef Processors, Inc.: *See*—
Lines, Dennis D., 4,206,691, Cl. 93-49.00R.
Iqbal, Zafar; Fair, Harry D., Jr.; and Downs, David S., to United States of America, Army. Electric initiator containing polymeric sulfur nitride. 4,206,705, Cl. 102-23.000.
Irschik, Heinz; Kipp, Dieter; and Harer, Helmut, to Robert Bosch GmbH. Battery supplied motor current control system with safety circuit. 4,207,503, Cl. 318-139.000.
Isaacs, Clifton J. Knife sled cultivator with weeder bar. 4,206,814, Cl. 172-44.000.
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Klund, William E.; Littrell, Woodrow H.; and Isaak, Robert D., 4,207,625, Cl. 367-135.000.
Isakson, Larry E.; and Stanuszek, Dennis M., to Midland-Ross Corporation. Piston overtravel indicator. 4,207,564, Cl. 340-626.000.
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Ishibashi, Hiroaki; and Tanoue, Shizuo, to Chisso Corporation. Method for producing pure phosphoric acid. 4,207,303, Cl. 423-321.00S.
Ishida, Koji: *See*—
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Ishii, Daido: *See*—
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.
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Kimura, Shinji; Takao, Hiroshi; Ishitani, Shigeo; Ikezawa, Kenji; and Sone, Koki, 4,207,159, Cl. 204-195.00S.
Isoard, Bernard, to Rhone-Poulenc-Textile. Method and apparatus for transferring textile yarns from a first treatment zone to a second. 4,206,883, Cl. 242-18.00G.
Itamoto, Shiuichi: *See*—
Kawasaki, Kenzo; and Itamoto, Shiuichi, 4,206,621, Cl. 72-130.000.
Iten, Kurt; and Hochuli, Franz, to Verzinkerei Zug AG. Cooking utensil. 4,206,853, Cl. 220-94.00R.
Ito, Katsuo; and Kontani, Kazuo, to Murata Manufacturing Co. VHF Television tuner circuit with supression of undesired signals. 4,207,549, Cl. 334-1.000.
Ito, Tatsuo, to Fujitsu Ten Limited. Tuning control system of radio receiver. 4,207,531, Cl. 455-164.000.
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Amaya, Yuji; and Ito, Tatsuo, 4,207,529, Cl. 455-158.000.
Ito, Toshimitsu: *See*—
Sanada, Masakatsu; and Ito, Toshimitsu, 4,207,277, Cl. 261-130.000.
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ITT Industries, Incorporated: *See*—
Bearcroft, Kenneth E., 4,206,642, Cl. 73-194.0VS.
Ivanko, Theodore, to Avco Corporation. Turbine rotor assembly of ceramic blades to metallic disc. 4,207,029, Cl. 416-241.00B.
Iwaki, Yoshiyuki: *See*—
Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,206,624, Cl. 72-131.000.
Iwami, Isamu: *See*—
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Iwao, Yutaka: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.
Iwashita, Tomonori: *See*—
Sunouchi, Akio; Tokuda, Ryuji; Uchidoi, Masanori; Kumazawa, Kenichi; and Iwashita, Tomonori, 4,206,987, Cl. 354-44.000.
Iwata Electric Works Co., Ltd.: *See*—
Nakamoto, Takayuki, 4,206,617, Cl. 64-13.000.
Iyeta, Motoi, to Nippon Gakki Seizo Kabushiki Kaisha. Rotation angle sensor. 4,207,463, Cl. 250-231.0SE.
Izakson, Ilya S.; and Nikolaenko, Arnold B. Adaptive filter network. 4,207,543, Cl. 333-17.00R.
Izbicki, Anthony J., to Hood & Company, Inc. Corrosion inhibited manganese alloys in thermal metals. 4,207,361, Cl. 427-328.000.
Izbicki, Anthony J., to Hood & Company, Inc. Aluminum thermostat metal. 4,207,380, Cl. 428-616.000.
J. M. Voith, GmbH: *See*—
Meinecke, Albrecht; and Zag, Heinrich, 4,207,144, Cl. 162-304.000.
Jachimiak, Paul D.: *See*—
Gaitten, Ronald E.; Jachimiak, Paul D.; Machmer, James A.; and Wittwer, Alvin L., 4,207,059, Cl. 432-60.000.
Jack, Stanton E.: *See*—
O'Dette, John H.; and Jack, Stanton E., 4,207,099, Cl. 75-251.000.
Jacobs, Barry E. A.: *See*—
Hark, William B.; Baker, Peter J.; Headford, Alan; and Jacobs, Barry E. A., 4,207,018, Cl. 406-105.000.
Jadamus, Hans: *See*—
Burzin, Klaus; Mumcu, Salih; Feldmann, Rainer; Jadamus, Hans; and Feinauer, Roland, 4,207,410, Cl. 528-288.000.
Jager, Wolfgang: *See*—
Hahn, Alfred; Gall, Arthur; and Jager, Wolfgang, 4,206,989, Cl. 354-182.000.
Jaimee, Angelo: *See*—
Rao, Vemulapalli D. N.; and Jaimee, Angelo, 4,206,598, Cl. 60-282.000.
Jakovlev, Vladimir: *See*—
von Bebenburg, Walter; Schulmeyer, Norbert; and Jakovlev, Vladimir, 4,207,322, Cl. 424-256.000.
James, David R., to Mecanaids Limited. Apparatus for lifting disabled persons. 4,206,523, Cl. 4-562.000.
James Joseph Morrison Management Ltd.: *See*—
Ashton, Bruce F., 4,206,666, Cl. 83-63.000.
Janko, Bozidar: *See*—
Tomison, William H.; Janko, Bozidar; Bostwick, Myron A., Jr.; and Silzars, Aris, 4,207,492, Cl. 315-3.000.
Janssens, Julian L. G., to International Standard Electric Corporation. Processor controlled telecommunication switching system. 4,207,437, Cl. 179-18.0ES.
Jantzen, Steven L.; and Rollins, Dallas W., to ACF Industries, Incorporated. Hopper car for liquid unit-train service. 4,206,709, Cl. 105-243.000.
Japan Spectroscopic Co. Ltd.: *See*—
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.
Jarcho, Michael, to Sterling Drug Inc. Process for producing polycrystalline ceramic oxides. 4,207,306, Cl. 423-633.000.
Jardon, Fritz; and Ruedemann, Albert D., Jr. Intraocular lens device. 4,206,518, Cl. 3-13.000.
Jarrell, Hal K. Earthen tank and liner. 4,207,017, Cl. 405-270.000.
Jaskolski, Stanley V.: *See*—
Spellman, Gordon B.; Jaskolski, Stanley V.; Schutten, Herman P.; and Lade, Robert W., 4,206,646, Cl. 73-362.0SC.
Jenkel, Howard D.; and Sheldon, Victor L., Jr., to Caterpillar Tractor Co. Injection nozzle clamp. 4,206,725, Cl. 123-32.00R.
Jenkins, Harry L.; Smelser, Gene C.; and Alford, David W., to BASF Wyandotte Corporation. Method for preparing improved toluene sulfonic acid derivatives and the products thereof. 4,207,254, Cl. 260-508.000.
Jenkins, Peter D.: *See*—
Cosier, James E. H.; and Jenkins, Peter D., 4,207,428, Cl. 174-70.00S.
Jespersen, Paul W.: *See*—
DeLuca, Raymond F.; and Jespersen, Paul W., 4,206,858, Cl. 225-96.000.
Jimmy Dean Meat Company, Inc., The: *See*—
Bernard, Vincent E., 4,207,281, Cl. 264-176.00R.
Jinno, Takayuki; Kotake, Yasuo; and Kikuchi, Toshihiro, to Dowa Mining Co., Ltd. Method and apparatus for supporting the wall of an upwardly excavated shaft. 4,207,016, Cl. 405-133.000.
Jobard, Alain: *See*—
Grandadam, Jean A.; Benet, Daniel; and Jobard, Alain, 4,206,757, Cl. 128-260.000.
Johns-Manville Corporation: *See*—
French, David W.; Faber, Richard C.; and Weger, Wayne D., 4,207,283, Cl. 264-322.000.
Johnson, Albert V. Heat extractor and shield for room stoves and the like. 4,206,742, Cl. 126-66.000.
Johnson, David A.: *See*—
Mahoney, Kenneth L.; and Johnson, David A., 4,206,744, Cl. 126-121.000.

Johnson, Frederick W.: *See*—
Clark, Gary A.; Johnson, Frederick W.; and Promis, George G., Jr., 4,206,996, Cl. 355-14.00C.
Johnson, John L., Jr.; Vize, Robert M.; and Wiggins, Noel D., to Caterpillar Tractor Co. Double orifice piston cooling nozzle for reciprocating engines. 4,206,726, Cl. 123-41.350.
Johnson, Orlin W.; and Kerber, Dathan R., to International Harvester Company. Floating cutterbar header. 4,206,584, Cl. 56-15.800.
Johnson, Orlin W.: *See*—
Week, Robert D.; Johnson, Orlin W.; and Kerber, Dathan R., 4,206,583, Cl. 56-15.800.
Johnson, Paul H., to Phillips Petroleum Company. Impregnating solid polyolefin with small size particles. 4,207,358, Cl. 427-185.000.
Johnson, Richard L.: *See*—
Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., 4,207,572, Cl. 343-113.00R.
Johnston, Earl D. Vent pipe cover. 4,206,692, Cl. 98-122.000.
Jolly, Jean; Matra, Bernard; and Rizzi, Primo, to Roussel Uclaf. 4,5-Seco-estrane-3,5,17-trione derivatives. 4,207,240, Cl. 260-340.9AS.
Jones, John K. N., deceased: *See*—
Szarek, Walter A.; and Jones, John K. N., deceased, 4,207,413, Cl. 536-1.000.
Jones & Laughlin Steel Corporation: *See*—
Hatters, Harry D.; and Stoll, Joseph M., 4,207,145, Cl. 201-41.000.
Jones, Marjorie I., executrix: *See*—
Szarek, Walter A.; and Jones, John K. N., deceased, 4,207,413, Cl. 536-1.000.
Jones, Paul W.: *See*—
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 4,207,394, Cl. 435-34.000.
Jones, Stanley C., to Marathon Oil Company. Slug design in micellar-polymer flooding. 4,206,809, Cl. 166-252.000.
Jordan, Heinrich; and Knabe, Uwe. Arrangement for filling liquids into a container. 4,206,789, Cl. 141-39.000.
Jorgensen, August H., Jr.; and Woods, Martin E., to B. F. Goodrich Company, The. Friable rubber bales. 4,207,218, Cl. 260-23.70M.
Jost, Steven R., to Grumman Aerospace Corporation. Electro-optic modulator. 4,206,979, Cl. 350-342.000.
Joy Manufacturing Company: *See*—
Bailey, Edward A.; and LeBlanc, Louis H., Jr., 4,206,820, Cl. 173-105.000.
Juengel, Richard O.; and Cook, Kenneth J., to Valeron Corporation, The. Broken, chipped and worn tool detector. 4,207,567, Cl. 340-680.000.
Jung, Herbert: *See*—
Kunstle, Gerhard; and Jung, Herbert, 4,207,259, Cl. 260-561.00K.
Jushunev, Marat N.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Jushunev, Marat N.; Garanin, Ernest M.; Kholin, Vladimir G.; and Murtazin, Khafiz M., 4,206,650, Cl. 73-421.00R.
Jutte, Gottfried W., to Richardson Company, The. Container for a remotely-vented battery. 4,207,387, Cl. 429-88.000.
Kabel-und Metallwerke Gutehoffnungshuette AG: *See*—
Adelhardt, Georg; Buettner, Karl; Feichtner, Walter; Hasselberg, Herbert; and Voelkel, Andreas, 4,206,889, Cl. 242-128.000.
Kabushika Kaisha Ueno Seiyakuoyo Kenkyujo: *See*—
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,207,350, Cl. 426-334.000.
Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Nakahara, Yasuyuki, 4,207,600, Cl. 360-71.000.
Kabushiki Kaisha Sato: *See*—
Sato, Yo, 4,206,702, Cl. 101-291.000.
Sato, Yo, 4,206,703, Cl. 101-291.000.
Kabushiki Kaisha Sato Kenkyusho: *See*—
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Kumagai, Kiyoshi; Awamura, Toshio; Aikawa, Kiyoshi; and Tatematsu, Tatsuo, 4,206,944, Cl. 296-76.000.
Kabushiki Kaisha Tokai Rika Denki: *See*—
Yoshitsugu, Noritada; Yasumatsu, Jun; Katsuno, Mitsuaki; and Tsujiuchi, Yoshio, 4,206,886, Cl. 242-107.200.
Kadija, Igor V.; and French, Jimmy M., to Olin Corporation. Process for the purification of alkali metal chloride brines. 4,207,152, Cl. 204-98.000.
Kadija, Igor V., to Olin Corporation. Diaphragms for use in the electrolysis of alkali metal chlorides. 4,207,163, Cl. 204-253.000.
Kadija, Igor V., to Olin Corporation. Diaphragms for use in the electrolysis of alkali metal chlorides. 4,207,164, Cl. 204-253.000.
Kadokura, Sadao; Honjo, Kazuhiko; and Kamei, Kazuhiro, to Teijin Limited. Formation of electrostatic latent image. 4,207,100, Cl. 430-48.000.
Kaduk, Charles L.: *See*—
Turner, Jesse H.; and Kaduk, Charles L., 4,207,053, Cl. 431-59.000.
Kagetsu, Tadashi J.; De Atley, William B.; and Fox, Joseph S., to Union Carbide Corporation. Processing of chromium ore. 4,207,295, Cl. 423-55.000.
Kahan, Jean S.: *See*—
Cassidy, Patrick J.; and Kahan, Jean S., 4,207,395, Cl. 435-119.000.
K. hbaum, William M., Jr., to United States of America, National Aeronautics and Space Administration. Chromatically corrected virtual image visual display. 4,206,970, Cl. 350-175.00E.
Kaim, John W., to AMSTED Industries Incorporated. Tail portion for railroad car coupler knuckle. 4,206,849, Cl. 213-151.000.
Kaiser, Leo E.; Scheidegger, Hans; and Haase, Jaroslav, to Ciba-Geigy AG. Process for the purification of industrial effluents. 4,207,184, Cl. 210-37.00R.
Kaiser Steel Corporation: *See*—
Wiese, Klaus H.; and Sullivan, James P., 4,206,848, Cl. 212-4.000.
Kaivola, Seppo. Speculum for gynecological endoscopy examination. 4,206,750, Cl. 128-17.000.
Kali Chemie Pharma GmbH: *See*—
Thies, Peter W.; Asai, Akiji; and David, Samuel, 4,207,331, Cl. 424-278.000.
Kalinowski, Robert E.: *See*—
Lipowitz, Jonathan; and Kalinowski, Robert E., 4,207,071, Cl. 8-115.600.
Kalka, Josef; and Winter, Hermann, to Chemische Werke Huls Aktiengesellschaft. Aftertreatment of spray dried, powdered vinyl chloride emulsion polymerizates. 4,207,412, Cl. 528-499.000.
Kambara, Hiroshi, to Rohm and Haas Company. Methylquinoline high polymer based on quaternary ammonium polymers. 4,207,399, Cl. 521-32.000.
Kamber, Peter W.: *See*—
Larsen, Hals N.; and Kamber, Peter W., 4,206,597, Cl. 60-226.00R.
Kamei, Kazuhiro: *See*—
Kadokura, Sadao; Honjo, Kazuhiko; and Kamei, Kazuhiro, 4,207,100, Cl. 430-48.000.
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. 4-Unsubstituted azetidinone derivatives and process for preparation thereof. 4,207,234, Cl. 260-239.00A.
Kamo, Tomoichi: *See*—
Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, 4,207,209, Cl. 252-462.000.
Kampiziones, Theodore G. Mobile cement block making machine. 4,207,041, Cl. 425-62.000.
Kampmann, Gerhard: *See*—
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Kanthal Corporation, The: *See*—
Haglund, John H.; and Grandi, Robert G., 4,207,457, Cl. 219-381.000.
Kao Soap Co., Ltd.: *See*—
Susaki, Akihiro; Tsuboki, Noboru; Amino, Kyoichi; and Hosoya, Minoru, 4,206,788, Cl. 141-1.000.
Kao, Wenling, to American Home Products Corporation. Prostaglandin derivatives. 4,207,419, Cl. 560-53.000.
Kapp, Joachim-Friedrich: *See*—
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.
Karasawa, Kensuke: *See*—
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,206,807, Cl. 165-105.000.
Karbachinsky, Vladimir M.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Karger, Arieh M.; and Fridrich, Elmer G., to General Electric Company. Cooling jacket for laser flash lamps. 4,207,541, Cl. 331-94.50P.
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Mizuno, Tiaki; and Kawashima, Yoshichi, 4,207,553, Cl. 340-73.000.
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Kennecke, Mario: *See*—
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.
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West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,207,280, Cl. 264-153.000.
Kenyon, Ralph E.: *See*—
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Nercessian, Sarkis, 4,207,475, Cl. 307-52.000.
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Kiesel, Karl: *See*—
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Kifferstein, Harry P. Back and head sheet. 4,206,945, Cl. 297-220.000.
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Kilo Corporation: *See*—
Wilson, Stephen S., 4,207,468, Cl. 250-341.000.
Kilty, Peter A., to Shell Oil Company. Process for preparing an ethylene oxide catalyst. 4,207,210, Cl. 252-463.000.
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, to Hercules Incorporated. Network structures and methods of making same. 4,207,375, Cl. 428-286.000.
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King, Edward A.: *See*—
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King, Kenneth J.: *See*—
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King, Lowell A.: *See*—
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Kipp, Thorwald, to Eisenwerk Weserhutte AG. Process for improving the impregnability of wood. 4,206,793, Cl. 144-325.000.
Kipple, William H.: *See*—
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Klaus, Arthur; and Tacke, Horst, to Signode Corporation. Cushioning device for a piston of a pneumatically operable driving tool. 4,206,687, Cl. 91-395.000.
Klaveness, Alf. Seismic well logging system and method. 4,207,619, Cl. 367-36.000.
Klein, Edgar: *See*—
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Klein, Jean-Claude, to Association pour la Recherche et le Developpement des Methodes et Processus Industriels A.R.M.I.N.E.S. Method and apparatus for the control and regulation of glycemia. 4,206,755, Cl. 128-214.00E.
Klein, Martin G., to Energy Research Corporation. System and apparatus for monitoring or controlling secondary battery operation. 4,207,514, Cl. 320-44.000.
Klein, Max. Expanded styrene-polymers and polyolefin micro-bits and their preparation. 4,207,378, Cl. 428-402.000.
Kleinewefers GmbH: *See*—
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Klemz, David B., to Vickerys Limited. Doctor blades and pressure plates. 4,206,528, Cl. 15-256.510.
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Klink, Rainer, to Deutsche Automobilgesellschaft mbH. Centrifugal clutch. 4,206,824, Cl. 180-65.00R.
Klostermark, Bernt. High-frequency transformer. 4,207,544, Cl. 333-24.00R.
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Klund, William E.; Littrell, Woodrow H.; and Isaak, Robert D., to United States of America, Navy. Doppler compensator for heterodyne correlation devices. 4,207,625, Cl. 367-135.000.
Knabe, Uwe: *See*—
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Knollmueller, Karl O., to Olin Corporation. Preparation of trialkoxysilanols. 4,207,247, Cl. 556-463.000.
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Kobori, Toshio; and Uchida, Isamu, to Minolta Camera Kabushiki Kaisha. Pentagonal roof reflecting mirror assembly for single lens reflex cameras. 4,206,991, Cl. 354-225.000.
Koch, Herbert. Sleigh having an improved inflatable body. 4,206,933, Cl. 280-18.000.
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Koepp, Jacqueline F. Automatic self-locking comb hair roller. 4,206,772, Cl. 132-43.00R.
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Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, to Furukawa Electric Company Ltd., The. Cylindrical heat exchanger using heat pipes. 4,206,807, Cl. 165-105.000.
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Koshigoe, Shinpei, to Tokyo Shibaura Electric Co., Ltd. Electron gun assembly. 4,207,491, Cl. 313-412.000.
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Kovar, Jan; and Drkal, Jan, to Vyzkumny ustav tvarecich stroju a technologie tvareni. Method of and apparatus for feeding rod-shaped elements sequentially in spaced relationship. 4,206,623, Cl. 72-108.000.
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Kramer, Rolf; Schneider, Felix; and Kampmann, Gerhard, to Waggon Union GmbH. Bunker closure door operating mechanism. 4,206,571, Cl. 49-340.000.
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. 1-Phenoxy-2-(2,4-dichlorophenyl)-1-imidazol-1-yl-ethan-2-ones and -ols and antimycotic and fungicidal use. 4,207,328, Cl. 424-273.00R.
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Kunke, Stefan, to Dragerwerk Aktiengesellschaft. Process for testing gases in body fluids for partial pressure and to a testing device therefor. 4,207,146, Cl. 204-1.00T.
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Kushto, Oliver J. Tethered lighter than air turbine. 4,207,026, Cl. 416-84.000.
Kussy, Frank W.; Haydu, John L.; and Heberlein, G. Erich, Jr., to Gould Inc. Protector means for electric motor. 4,207,602, Cl. 361-24.000.

Kuziak, William R., Jr.; Razinsky, Elias H.; and Yu, Mason K., to General Motors Corporation. Dual shaft gasifier spool for two shaft gas turbine engine. 4,206,596, Cl. 60-39.16R.

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Ladenberger, Volker; Bronstert, Klaus; Fahrbach, Gerhard; and Groh, Wolfgang, to BASF Aktiengesellschaft. Catalytic hydrogenation of diolefin polymers. 4,207,409, Cl. 525-338.000.

Laforest, Jacqueline: *See*—
Thuillier, Germaine; Laforest, Jacqueline; and Bessin, Pierre, 4,207,319, Cl. 424-248.510.

Lai, John T.; and Son, Pyong N., to B. F. Goodrich Company, The. UV-Light-stabilized compositions containing substituted 1,5-diazacycloalkanes, novel compounds and synthesis thereof. 4,207,228, Cl. 260-45.80N.

Lamb, Frank: *See*—
Randell, Donald R.; Hyde, Thomas G.; Lamb, Frank; Clubley, Brian G.; and Davis, Boyce I. D., 4,207,224, Cl. 260-30.60R.

Lang, Richard D.; and Matthews, Richard E., to Carrier Corporation. Method and apparatus for eliminating external condensate on a room air conditioner. 4,206,611, Cl. 62-85.000.

Langford, Philip W., to Tenneco Chemicals, Inc. Iodine-amine oxide disinfectants. 4,207,310, Cl. 424-150.000.

Lanzilliotti, Harry V.: *See*—
Lilly, A. Clifton, Jr.; Claflin, Warren E.; Hardesty, William R.; and Lanzilliotti, Harry V., 4,207,458, Cl. 219-384.000.

Larsen, Hals N.; and Kamber, Peter W., to Boeing Company, The. Fan R.P.M. control loop stabilization using high rotor speed. 4,206,597, Cl. 60-226.00R.

Larsen, Roland G.: *See*—
Runnells, Robert R.; Schmoegner, John C.; Larsen, Roland G.; and De La Mare, Robert A., 4,206,546, Cl. 433-79.000.

Laser Precision Corp.: *See*—
Doyle, Walter M., 4,207,467, Cl. 250-338.000.

Laurent, Henry: *See*—
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.

Lavagnino, Edward R.; McShane, Lawrence J.; and Molloy, Bryan B., to Eli Lilly and Company. 1-Phenyl-3-(substituted phenoxy)propylamines. 4,207,343, Cl. 424-330.000.

Lawrence, Harry: *See*—
Ruggeri, Albert; Ruggeri, Joseph; and Lawrence, Harry, 4,206,720, Cl. 119-17.000.

Lebailly, Jacques, to U.S. Philips Corporation. Semiconductor device having a passivating layer. 4,207,586, Cl. 357-52.000.

LeBlanc, Louis H., Jr.: *See*—
Bailey, Edward A.; and LeBlanc, Louis H., Jr., 4,206,820, Cl. 173-105.000.

Lee, Benedict M., to Eastman Kodak Company. Air dissipator apparatus for airjet tow puddling. 4,206,860, Cl. 226-97.000.

Lee, Cleve L., to Perfection Manufacturing Company, The. Work control apparatus in an exerciser. 4,206,914, Cl. 272-73.000.

Lee, Roland W. Retainer for murine specimens and test equipment. 4,206,721, Cl. 119-103.000.

Lee, Terry J., to Pfizer Inc. Flue gas scrubber. 4,207,290, Cl. 422-109.000.

Leesona Corp.: *See*—
Barnes, William; Gerstenberg, Roy W.; Kropa, Gomer E.; and Oakes, Thomas M., 4,206,882, Cl. 241-221.000.

Leesona Corporaton: *See*—
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,207,280, Cl. 264-153.000.

Legg, Ernest L., to Xerox Corporation. Reproduction machine with on board document handler diagnostics. 4,206,995, Cl. 355-14.00C.

Leitzman, Noel E.: *See*—
McMillen, Russell G.; and Leitzman, Noel E., 4,206,826, Cl. 180-77.0TC.

LeMay, Christopher A. G., to E M I Limited. Ultrasonic apparatus. 4,206,653, Cl. 73-602.000.

Lemelson, Jerome H. Wave generating apparatus and method. 4,207,154, Cl. 204-157.10S.

Leneveu, Louis J. J.: *See*—
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., 4,207,008, Cl. 366-309.000.

Leonard, Marvin L. Energy saving cover for mobile home. 4,206,575, Cl. 52-3.000.

Leopoldi, Norbert. Light reflecting magnifier. 4,206,978, Cl. 350-252.000.

Le Page, Jean-Francois: *See*—
Courty, Philippe; Martino, Germain; and Le Page, Jean-Francois, 4,207,169, Cl. 208-124.000.

Leppanen, Olavi A.: *See*—
Ronkainen, Pentti P.; Leppanen, Olavi A.; Vento, Kyosti T.; and Pesonen, Heimo K., 4,207,276, Cl. 261-114.00A.

Letendre, Toni: *See*—
Dentino, Mauro J.; Huey, Harry M.; and Letendre, Toni, 4,207,624, Cl. 367-135.000.

Levine, Michael R. Electronic thermostat. 4,206,872, Cl. 236-46.00R.

Lewellyn, Morris E.: *See*—
Wang, Samuel S.; Lewellyn, Morris E.; and Dugan, Charles, 4,207,186, Cl. 210-54.000.

Lewis, Fielding H., Jr., to Wm. T. Burnett & Co., Inc. Lacrosse stick with knurled metallic handle. 4,206,918, Cl. 273-326.000.

Lewis, Paul H., to Michigan Technological University. Dual-adjustment balance circuit for operational amplifiers. 4,207,536, Cl. 330-69.000.

Lewis, Robert W.: *See*—
Gara, Aaron D.; and Lewis, Robert W., 4,207,002, Cl. 356-375.000.

Leybold-Heraeus GmbH & Co. KG: *See*—
Maskrey, Alfred E.; and Hockenberry, Donald H., 4,207,031, Cl. 417-12.000.

Libbey-Owens-Ford Company: *See*—
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., 4,206,748, Cl. 126-444.000.

Liburdy, Robert P. Rabbit immunoglobulin-N-(3-pyrene)-maleimide conjugate for fluorescent immunoassay. 4,207,075, Cl. 23-230.00B.

Licciardi, Robert P. Method and device for making combined images for photography. 4,206,997, Cl. 355-39.000.

Lilly, A. Clifton, Jr.; Claflin, Warren E.; Hardesty, William R.; and Lanzilliotti, Harry V., to Philip Morris Incorporated. Method of electrically perforating a planar web. 4,207,458, Cl. 219-384.000.

Lincoln, Frank H., to Upjohn Company, The. 6-Alkoxy prostaglandin I_1 compounds. 4,207,242, Cl. 260-347.400.

Lindahl, Jonas A. I., to Mo och Domsjo Aktiebolag. Method of producing groundwood pulp. 4,207,140, Cl. 162-23.000.

Lindahl, Jonas A. I.: *See*—
Haikkala, Pekka O.; and Lindahl, Jonas A. I., 4,207,139, Cl. 162-23.000.

Lindquist, Robert H., to Chevron Research Company. Contact lens sterilizer apparatus. 4,207,287, Cl. 422-33.000.

Lines, Dennis D., to Iowa Beef Processors, Inc. Box forming apparatus. 4,206,691, Cl. 93-49.00R.

Linetsky, Mikhail. Casting and erecting machine. 4,207,042, Cl. 425-62.000.

Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, to BASF Aktiengesellschaft. Preparation of 2,5-dimethylfuran-3-carboxylic acid alkyl esters. 4,207,243, Cl. 260-347.500.

Lionello, Vincenzo, to Carle & Montanari S.p.A. Apparatus for automatically cutting and feeding wafer biscuits and like products to movable moulds. 4,207,044, Cl. 425-126.00R.

Lipowitz, Jonathan; and Kalinowski, Robert E., to Dow Corning Corporation. Durable modification of fibrous substrates using a polyoxyethylene-containing silane and articles therefrom. 4,207,071, Cl. 8-115.600.

Lissaman, Peter B. S.: *See*—
MacCready, Paul B., Jr.; Lissaman, Peter B. S.; and Burke, James D., 4,206,892, Cl. 244-45.00A.

Litton Systems, Inc.: *See*—
Werginz, Karl, 4,206,881, Cl. 241-207.000.

Littrell, Woodrow H.: *See*—
Klund, William E.; Littrell, Woodrow H.; and Isaak, Robert D., 4,207,625, Cl. 367-135.000.

Liu, Chia-Seng: *See*—
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,207,375, Cl. 428-286.000.

Liu, Frank C.: *See*—
Gibson, Walter G.; and Liu, Frank C., 4,207,597, Cl. 358-195.100.

Liu, Hua-Kuang, to Lumin Inc. Method of producing contour mapped and pseudo-colored versions of black and white photographs. 4,207,370, Cl. 428-204.000.

Lobel, Leon: *See*—
Lobel, Stanley; Lobel, Leon; and Schachter, Herbert I., 4,206,856, Cl. 222-564.000.

Lobel, Stanley; Lobel, Leon; and Schachter, Herbert I. Liquid separating vessel. 4,206,856, Cl. 222-564.000.

Lord, Raymond E. Prefabricated full crown system. 4,206,545, Cl. 433-183.000.

Lorenz, Donald H.; and Gruber, Bruce A., to GAF Corporation. Method of making copolymerizable, ultraviolet light absorber (2-cyano-3,3-diphenylacryloxy) alkylene acrylic acid esters. 4,207,253, Cl. 260-465.00D.

Lotze, Thomas H., to Cambridge Instrument Company, Inc. Chemical detector utilizing an electrolytic gel. 4,207,162, Cl. 204-195.00R.

Lowry, Lewis R., Jr.: *See*—
Hanes, Maurice H.; and Lowry, Lewis R., Jr., 4,207,587, Cl. 357-74.000.

Loyer, Philip K., to Dayco Corporation. Method of producing a continuous flexible tubular conduit. 4,207,127, Cl. 156-50.000.

Lucas Industries Limited: *See*—
Hollyoak, John D., 4,206,656, Cl. 74-6.000.
Taylor, Joseph D. F., 4,207,512, Cl. 320-17.000.

Luchaco, David G.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,207,497, Cl. 315-96.000.
Spira, Joel S.; Capewell, Dennis; and Luchaco, David G., 4,207,498, Cl. 315-97.000.

Lucki, Stanley J.; and Brennan, James A., to Mobil Oil Corporation. Method for regeneration and activity improvement of syngas conversion catalyst. 4,207,208, Cl. 252-455.00Z.

Ludlow Corporation: *See*—
Lyons, Joseph N., Jr., 4,207,580, Cl. 346-136.000.

Ludwig, George C., to Tom McGuane Industries, Inc. Air cleaner temperature sensor. 4,206,732, Cl. 123-122.00D.

Ludwig, Lawrence P.: *See*—
Bill, Robert C.; and Ludwig, Lawrence P., 4,207,024, Cl. 415-174.000.

Ludwig, Melvin S.; and Tansi, Hakki M., to Eagle Electric Mfg. Co., Inc. Protected electrical connector. 4,206,957, Cl. 339-40.000.

Luehr, Wolfgang. Roulette-type game apparatus. 4,206,921, Cl. 273-142.00D.

Luiz, Fernando A.; Snyder, Harlan C.; and Sorg, John H., Jr., to International Business Machines Corporation. Method and means for path independent device reservation and reconnection in a multi-CPU and shared device access system. 4,207,609, Cl. 364-200.000.

Lumin Inc.: *See*—
Liu, Hua-Kuang, 4,207,370, Cl. 428-204.000.

Lummus Company, The: *See*—
Simone, Andre A., 4,207,168, Cl. 208-86.000.
Sze, Morgan C.; Riegel, Herbert; and Schindler, Harvey D., 4,207,268, Cl. 260-659.00R.

Lundgren, Rolf B., to Mo och Domsjo Aktiebolag. Screw conveyor capable of maintaining a relatively uniform flow of conveyed material. 4,206,841, Cl. 198-670.000.

Lunsford, Carl D.; and Cale, Albert D., Jr., to A. H. Robins Company, Inc. N-(4-Pyrazolidinyl)benzamides and their amino precursors. 4,207,327, Cl. 424-273.00P.

Luoto, Reino E.: *See*—
Byrd, Norman R.; and Luoto, Reino E., 4,207,291, Cl. 422-122.000.

Lustig, Stanley; and Anthony, John, to Union Carbide Corporation. Flexible heat-shrinkable multilayer film for packaging primal meat. 4,207,363, Cl. 428-35.000.

Lutron Electronics Co., Inc.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,207,497, Cl. 315-96.000.
Spira, Joel S.; Capewell, Dennis; and Luchaco, David G., 4,207,498, Cl. 315-97.000.

Lux, Peter: *See*—
Dittrich, Jurgen; Heinzerling, Jurgen; and Lux, Peter, 4,207,595, Cl. 358-111.000.

Lydmar, Arne, to Ingenjorsfirma Eifa AB. Knock-down cupboard assembly. 4,206,956, Cl. 312-257.0SK.

Lydon, Edward B. Cross bow pistol. 4,206,740, Cl. 124-25.000.

Lynch, Alban J.; and Gallagher, Eugene, to University of Queensland, The. Particle size analyzer. 4,207,001, Cl. 356-335.000.

Lyons, Joseph N., Jr., to Ludlow Corporation. Matrix printing chart paper. 4,207,580, Cl. 346-136.000.

MacCready, Paul B., Jr.; Lissaman, Peter B. S.; and Burke, James D., to MacCready, Paul B., Jr. Lightweight aircraft. 4,206,892, Cl. 244-45.00A.

MacDuff, Richard: *See*—
Kim, Charles W.; Liu, Chia-Seng; and MacDuff, Richard, 4,207,375, Cl. 428-286.000.

MacFadden, Donald L., to Chevron Research Company. Cellulose fermentation process. 4,207,396, Cl. 435-244.000.

Machmer, James A.: *See*—
Gaitten, Ronald E.; Jachimiak, Paul D.; Machmer, James A.; and Wittwer, Alvin L., 4,207,059, Cl. 432-60.000.

MacLeod, Norman C., to Technology Development Corporation. Underwater communications system. 4,207,568, Cl. 340-852.000.

MacLeod, Patrick: *See*—
Ricard, Claude F. F.; Chouard, Claude-Henri; and MacLeod, Patrick, 4,207,441, Cl. 179-107.00R.

Madson, Lawrence P.: *See*—
Keller, John T.; Madson, Lawrence P.; and Kolman, Richard P., 4,206,654, Cl. 73-620.000.

Maeda, Haruo, to Olympus Optical Co., Ltd. High resolution objective lens system. 4,206,974, Cl. 350-215.000.

Maeda, Haruo, to Olympus Optical Co., Ltd. Retrofocus type wide-angle lens system. 4,206,975, Cl. 350-215.000.

Maekawa, Yasuo, to Citizen Watch Co., Ltd. Watchglass fixing structure for timepiece. 4,206,591, Cl. 368-295.000.

Maekawa, Yasuo: *See*—
Fukutome, Satoru; and Maekawa, Yasuo, 4,206,590, Cl. 368-72.000.

Maender, Otto W., to Monsanto Company. Scorch inhibited vulcanizable rubber compositions. 4,207,216, Cl. 260-5.000.

Maertens, Donald E., to General Motors Corporation. Vehicle convertible seat and locking arrangement. 4,206,946, Cl. 297-379.000.

Magyar Asvanyolaj es Foldgaz Kiserleti Intezet: *See*—
Csikos, Rezso; Decsy, Zoltan; Trocsanyi, Zeno; Varga, Zsolt; and Wittman, Zsuzsa, 4,207,261, Cl. 260-580.000.

Magyar, Joseph J., to General Motors Corporation. Tension reliever for seat belt retractor. 4,206,888, Cl. 242-107.700.

Mahoney, Kenneth L.; and Johnson, David A., to American Standard Inc. Air control assembly for heat circulating fireplace. 4,206,744, Cl. 126-121.000.

Makovec, Donald J.; and Haskell, Donald M., to Phillips Petroleum Company. Acid type hydrocarbon alkylation with acid-soluble oil addition. 4,207,423, Cl. 585-332.000.

Mallory Components Group Emhart Industries, Inc.: *See*—
Pomerantz, Daniel I.; Spofford, Walter R., Jr.; and Goldstein, Sanders, 4,206,552, Cl. 34-23.000.

Malo, Charles: *See*—
Malo, Richard J.; and Malo, Charles, 4,207,049, Cl. 425-129.00R.

Malo, Richard J.; and Malo, Charles. Device for mold coating plastic parts. 4,207,049, Cl. 425-129.00R.

Malpass, Dennis B.: *See*—
Sanchez, Ramiro; Fannin, Loyd W.; and Malpass, Dennis B., 4,207,207, Cl. 252-431.00R.

Mancer, Terence A.: *See*—
Nysse, Karel J.; Beentjes, Hermanus J.; and Mancer, Terence A., 4,206,631, Cl. 73-40.000.

Manecke, Siegfried E.; and Buckshaw, Thomas M., to Robertshaw Controls Company. Pressure operated water level control device and temperature responsive unit therefor or the like. 4,206,780, Cl. 137-387.000.

Manov-Juvensky, Vladimir I.: *See*—
Nefedov, Boris K.; Dergunov, Jury I.; Rysikhin, Anatoly I.; Manov-Juvensky, Vladimir I.; Balabanov, Georgy P.; and Khoshdurdyev, Khakberdy O., 4,207,212, Cl. 252-468.000.

Mansukhani, Ishwar R., to Whittaker Corporation. Opaque jet inks. 4,207,577, Cl. 346-1.100.

Manz, David F., to General Motors Corporation. Locking differential for a four-wheel drive system having a coast-release mechanism. 4,206,662, Cl. 74-710.500.

Mar, Jerry, to Intel Corporation. Non-volatile ram cell. 4,207,615, Cl. 365-95.000.

Marathon Oil Company: *See*—
Jones, Stanley C., 4,206,809, Cl. 166-252.000.

Marciniec, Edmund T., to Extel Corporation. Method of manufacturing thin film thermal print heads. 4,206,541, Cl. 29-611.000.

Mares, Frank: *See*—
Diamond, Steven E.; Mares, Frank; and Tovrog, Benjamin S., 4,207,305, Cl. 423-573.00R.

Marinello, Raymond J.: *See*—
Desai, Ashok K.; Brand, Abraham; Dunstan, Eric M.; and Marinello, Raymond J., 4,207,601, Cl. 360-78.000.

Marinoff, George, to Mead Corporation, The. Catch trough for a jet drop recorder. 4,207,578, Cl. 346-75.000.

Marinoff, George: *See*—
Gamblin, Rodger L.; and Marinoff, George, 4,207,579, Cl. 346-75.000.

Markey, John J.; and Farnhill, William M., to Platt Saco Lowell Limited. Formation of a self twist fibrous structure. 4,206,589, Cl. 57-293.000.

Markl, Erich: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,207,246, Cl. 556-439.000.

Marmon Company: *See*—
Bagus, Brian M.; and Schrecongost, Ray B., 4,206,674, Cl. 84-1.010.

Marquest Medical Products, Inc.: *See*—
Bailey, Donald L., 4,206,768, Cl. 128-763.000.

Mars Mineral Corporation: *See*—
Engelleitner, William H., 4,207,050, Cl. 425-183.000.

Marsden, Howard A.: *See*—
Haak, Willard J.; Marsden, Howard A.; and Moots, Paul C., 4,206,688, Cl. 91-452.000.

Martel, Robert J.; and Ewanus, Walter, to Westinghouse Electric Corp. Carrier control system for suppressed carrier modulators. 4,207,525, Cl. 455-109.000.

Martin, Jerry R.: *See*—
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,207,415, Cl. 536-17.00R.

Martin, Preston K.; Hoffman, William A., III; and Trebellas, John C., to Celanese Corporation. Diluents for ultraviolet coating compositions. 4,207,155, Cl. 204-159.230.

Martin, Sylvia: *See*—
Creutz, Hans G., deceased; Martin, Sylvia; Saez, Debra J.; and Herr, Roy W., 4,207,150, Cl. 204-55.00R.

Martino, Germain: *See*—
Courty, Philippe; Martino, Germain; and Le Page, Jean-Francois, 4,207,169, Cl. 208-124.000.

Martino, Mark S.: *See*—
Gulliksen, John E.; Guimond, Roy A.; Martino, Mark S.; and Collins, Michael E., 4,207,606, Cl. 362-106.000.

Marumoto, Katsuji; Kuriyama, Schigeru; and Omae, Tsutomu, to Hitachi, Ltd. DC Chopper device. 4,207,478, Cl. 307-240.000.

Marvin Glass & Associates: *See*—
Morrison, Howard J.; and Baer, Ralph H., 4,207,087, Cl. 273-1.00E.

Marx, Matthias: *See*—
Blum, Rainer; and Marx, Matthias, 4,207,222, Cl. 260-29.300.

Marze, Xavier, to Rhone-Poulenc Industries. Polymeric compositions for membranes. 4,207,182, Cl. 210-23.00F.

Maschinenfabrik Augsburg-Nurnberg Aktiengesellschaft: *See*—
Heeren, Hermann; and Kraetschmer, Liselotte, 4,206,738, Cl. 165-148.000.

Maskrey, Alfred E.; and Hockenberry, Donald H., to Leybold-Heraeus GmbH & Co. KG. Dual speed rotary vane pump. 4,207,031, Cl. 417-12.000.

Masler, William F., III; and Spaulding, David C., to B. F. Goodrich Company, The. Water-soluble phosphorus containing carboxylic polymers. 4,207,405, Cl. 525-328.000.

Mason, David R.; Blair, Alan; and Stevenson, John S., to Engelhard Minerals & Chemicals Corporation. Gold electroplating solutions and processes. 4,207,149, Cl. 204-46.00G.

Massey-Ferguson Inc.: *See*—
Mueller, Otto, Jr.; and Elfes, Lee E., 4,206,813, Cl. 172-7.000.

Masuda, Takao: *See*—
Ikenoue, Shinpei; Masuda, Takao; and Sakawaki, Shinichi, 4,207,112, Cl. 430-566.000.

Matra, Bernard: *See*—
Jolly, Jean; Matra, Bernard; and Rizzi, Primo, 4,207,240, Cl. 260-340.9AS.

Matsuda, Hisashi: *See*—
Murayama, Noboru; Taniguchi, Hayashi; Konishi, Akira; and Matsuda, Hisashi, 4,207,599, Cl. 358-261.000.

Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, to Hitachi, Ltd. Sintered catalytic or absorbent metallic product and method for sintering metallic powders. 4,207,209, Cl. 252-462.000.

Matsuda, Toshio: *See*—
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, 4,207,350, Cl. 426-334.000.

Matsugu, Youichi; and Gibu, Yoshitaka, to Asahi Seimitsu Kabushiki Kaisha. Universal parallel ruler for three-dimensional drawing. 4,206,551, Cl. 33-434.000.

Matsumoto, Koji: *See*—
Koizumi, Tatsuya; Furuya, Shuichi; Matsumoto, Koji; and Karasawa, Kensuke, 4,206,807, Cl. 165-105.000.

Matsumura, Koichi; Hashimoto, Naoto; and Furukawa, Yoshiyasu, to Takeda Chemical Industries, Ltd. 1,2-Di-Substituted-4-haloimidazole-5-acetic acid derivatives and their use. 4,207,324, Cl. 424-273.00R.

Matsushita Electric Industrial Co., Ltd.: *See*—
Fukuda, Sadao; Fukunaga, Hidemi; and Kumano, Hiroshi, 4,207,097, Cl. 75-166.00D.
Minakuchi, Hiroshi, 4,207,539, Cl. 331-1.00A.

Matsushita, Sachio: *See*—
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,207,157, Cl. 204-180.00P.

Matsuura, Yasuo, to Mikado Precision Industries Ltd. Key-operated switch and an assemblage of such switches for electronic desk calculators or the like. 4,207,443, Cl. 200-5.00A.

Matthews, Richard E.: *See*—
Lang, Richard D.; and Matthews, Richard E., 4,206,611, Cl. 62-85.000.

Mattis, Donald J.: *See*—
Horwitt, Laurence G.; and Mattis, Donald J., 4,207,455, Cl. 219-265.000.

Maue, Marilyn J. Timepiece for identifying time by color. 4,206,592, Cl. 368-233.000.

Mauri Brother & Thomson (N.Z.) Limited: *See*—
Stanton, Graham B., 4,206,880, Cl. 241-98.000.

Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, to Hoechst Aktiengesellschaft. Phosphites of polyalcohols. 4,207,270, Cl. 260-927.00R.

Mayerhoff, Evan: *See*—
Gitlin, Robert; and Mayerhoff, Evan, 4,207,566, Cl. 340-664.000.

Mazer, Jack S.: *See*—
Reed, William G.; Mazer, Jack S.; and Shade, Russell L., Jr., 4,206,802, Cl. 165-1.000.

Mazzucchelli, Peppino. Apparatus for the exact weighing of material in lots of mixed-size pieces. 4,206,822, Cl. 177-25.000.

McAlpine, James B.: *See*—
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,207,415, Cl. 536-17.00R.

McCall, John M., to Upjohn Company, The. Benzothiepins. 4,207,239, Cl. 549-9.000.

McCarthy, William C.; and Goard, Howard W., to Phillips Petroleum Company. Biotreatment using carbon treated recycle and/or clarifier effluent backwash. 4,207,179, Cl. 210-7.000.

McCracken, John R.: *See*—
Chaikin, Malcolm; and McCracken, John R., 4,207,244, Cl. 260-397.250.

McCrory Corporation: *See*—
Baldassarre, Richard; and Graves, James, 4,206,563, Cl. 46-1.00E.

McDermott, Roger D.: *See*—
Wagner, Eugene R.; and McDermott, Roger D., 4,207,330, Cl. 424-275.000.

McDonald, John W. Oblique core locking mechanism for die casting machines. 4,206,799, Cl. 164-341.000.

McDonnell Douglas Corporation: *See*—
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 4,207,394, Cl. 435-34.000.
Byrd, Norman R.; and Luoto, Reino E., 4,207,291, Cl. 422-122.000.

McDonough Manufacturing Company: *See*—
Detjen, Robert K., 4,206,673, Cl. 83-731.000.

McDowell, Hunter L., to United States of America, Air Force. Means for improving the collector efficiency of an emitting sole crossed field amplifier. 4,207,495, Cl. 315-39.300.

McGrew, Stephen P. System for synthesizing strip-multiplexed holograms. 4,206,965, Cl. 350-3.760.

McKay, Dwight L.; and Bertus, Brent J., to Phillips Petroleum Company. Passivation of metals on cracking catalyst with a crude antimony tris(O,O-dihydrocarbyl phosphorodithioate). 4,207,204, Cl. 252-411.00R.

McKechnie, John C.; and Grimmer, Paul D., to United States of America, Navy. Surface profile follower and indicator system. 4,206,633, Cl. 73-105.000.

McKee, Laird W., to Grumman Flexible Corporation. Control valve mechanism for an air spring vehicle suspension. 4,206,934, Cl. 280-711.000.

McKenna, David: *See*—
Hopkins, Joseph; and McKenna, David, 4,207,469, Cl. 250-343.000.

McMillen, Russell G.; and Leitzman, Noel E., to International Harvester Company. Transmission remote shift system of the disconnect type for a cab-over chassis. 4,206,826, Cl. 180-77.0TC.

McNeilab, Inc.: *See*—
Carson, John R.; Carmosin, Richard J.; and Stefanski, Anthony T., 4,207,237, Cl. 260-326.200.
Gardocki, Joseph F., 4,207,340, Cl. 424-317.000.

McShane, Lawrence J.: *See*—
Lavagnino, Edward R.; McShane, Lawrence J.; and Molloy, Bryan B., 4,207,343, Cl. 424-330.000.

McVoy, David S., to Broadband Technologies, Inc. Apparatus and method for monitoring a communications system. 4,207,431, Cl. 179-1.0MN.

MDT Instrument Company: *See*—
Runnells, Robert R.; Schmoegner, John C.; Larsen, Roland G.; and De La Mare, Robert A., 4,206,546, Cl. 433-79.000.

Mead Corporation, The: *See*—
Gamblin, Rodger L.; and Marinoff, George, 4,207,579, Cl. 346-75.000.
Marinoff, George, 4,207,578, Cl. 346-75.000.

Mecanaids Limited: *See*—
James, David R., 4,206,523, Cl. 4-562.000.

Med-El Inc.: *See*—
Resnick, Jerome B.; and Combs, John W., 4,207,554, Cl. 340-146.3CA.

Medical Devices, Inc.: *See*—
Wingrove, Robert C., 4,206,767, Cl. 128-762.000.

Meginnis, Charles E. Method of making a sight glass assembly. 4,206,537, Cl. 29-447.000.

Mehren, Herbert; and Wulf, Helmut, to Daimler-Benz Aktiengesellschaft. Installation for the power assist of actuating devices in motor vehicles, especially in a hydraulic brake system. 4,206,605, Cl. 60-545.000.

Meier, Hubert: *See*—
Haake, Hinrich; Stampfer, Michael; Meier, Hubert; Franke, Reimar; Dalmer, Hans-Jurgen; Ott, Ernst; and Kienle, Josef, 4,206,581, Cl. 56-14.600.

Meiller, Hermann; and Hocke, Horst, to Messrs. Willibald Grammer. Push button lock for safety belt. 4,206,533, Cl. 24-230.0AK.

Meinecke, Albrecht; and Zag, Heinrich, to J. M. Voith, GmbH. Papermaking machines. 4,207,144, Cl. 162-304.000.

Meinhold, Henner; Haar, Wilhelm; and Fischer, Wilfried, to Brown, Boveri & Cie AG. Electrochemical storage cell. 4,207,386, Cl. 429-62.000.

Meininghaus, Fritz: *See*—
Diener, Arnulf; Meininghaus, Fritz; Oehmen, Gunter; and Schrott, Robert, 4,207,094, Cl. 75-60.000.

Meissner, Konrad E., to California Processing Machinery. Method and apparatus for selective pitting of fruits of the drupe type. 4,206,697, Cl. 99-489.000.

Mekler, Dan. Single hand operated tool. 4,206,603, Cl. 60-477.000.

Melocik, Grant C., to Towmotor Corporation. Control system for lift trucks or the like. 4,206,829, Cl. 180-290.000.

Meng, Ilse H. F., heir: *See*—
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.

Meng, Karl-August, deceased: *See*—
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.

Merchant, Stanley R.; and Cermak, Michael J., to Ford Motor Company. Titania thermistor and method of fabricating. 4,206,647, Cl. 73-362.0AR.

Mercier, Jacques H., to Normand Trust, The. Variable volume hydropneumatic accumulator. 4,206,908, Cl. 267-8.00R.

Merck & Co., Inc.: *See*—
Beattie, Thomas R.; Dininno, Frank P.; and Christensen, Burton G., 4,207,323, Cl. 424-270.000.
Cassidy, Patrick J.; and Kahan, Jean S., 4,207,395, Cl. 435-119.000.
Williams, Haydn W. R.; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,207,329, Cl. 424-274.000.

Merkle, Hans: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, 4,207,243, Cl. 260-347.500.

Messenger, Charles G.: *See*—
Hudak, Joseph M.; Zielinski, Gerald L.; and Messenger, Charles G., 4,207,460, Cl. 455-612.000.

Messrs. Willibald Grammer: *See*—
Meiller, Hermann; and Hocke, Horst, 4,206,533, Cl. 24-230.0AK.

Metaframe Corporation: *See*—
Faris, Edwin E., 4,206,719, Cl. 119-5.000.

Metallgesellschaft Aktiengesellschaft: *See*—
Gelhaar, Rolf; and Schwarzkopf, Werner, 4,207,083, Cl. 55-129.000.

Metcalfe, Robert A.; and Bourdeau, Romeo G., to United Technologies Corporation. Rotary atomization means for the production of metal powder. 4,207,040, Cl. 425-8.000.

Meunier, Robert: *See*—
Camplan, Jean; Chaumont, Jacques; and Meunier, Robert, 4,207,489, Cl. 313-363.000.

Meyer, Jack R. Railroad radio frequency waveguide. 4,207,569, Cl. 343-6.50R.

Meyer, Michael C.: *See*—
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 4,207,394, Cl. 435-34.000.

Meyer, Michael M. Alarm system with acoustically coupled transmitters and receiver. 4,207,559, Cl. 340-531.000.

Michigan Technological University: *See*—
Lewis, Paul H., 4,207,536, Cl. 330-69.000.
Micro-Circuits Company: *See*—
Bradley, Robert F., 4,206,838, Cl. 194-4.00F.
Midland-Ross Corporation: *See*—
Isakson, Larry E.; and Stanuszek, Dennis M., 4,207,564, Cl. 340-626.000.
Isakson, Larry E.; Stanuszek, Dennis M.; and Fritsche, William E., 4,207,565, Cl. 340-626.000.
Soupal, Thomas R., 4,207,563, Cl. 340-626.000.
Mieyal, David F., to Donn Incorporated. Grid tee for suspension ceilings or the like. 4,206,578, Cl. 52-730.000.
Miille, Gerard J., to GTE Automatic Electric Laboratories Incorporated. Fast redundant pulse density analyzer. 4,207,534, Cl. 328-147.000.
Mikado Precision Industries Ltd.: *See*—
Matsuura, Yasuo, 4,207,443, Cl. 200-5.00A.
Mikami, Tokuhiro: *See*—
Harada, Masaki; and Mikami, Tokuhiro, 4,207,430, Cl. 179-1.00F.
Miles, Donald L.; and Reinke, Paul E., to General Motors Corporation. Mechanical throttle body injection apparatus. 4,206,735, Cl. 123-139.0AW.
Miller, Arthur, to RCA Corporation. Waveguide method for determining stress at the convex surface of a body. 4,207,000, Cl. 356-33.000.
Miller, Donald E., to Continental Group, Inc., The. Press with hydraulic load transferring mechanism. 4,206,628, Cl. 72-354.000.
Miller, Guy W., to United Technologies Corporation. Formed louver for burner liner. 4,206,865, Cl. 228-152.000.
Miller, Harry B., to United States of America, Navy. Direction-finding array of crossed dipoles. 4,207,622, Cl. 367-126.000.
Miller, Richard R.: *See*—
Watson, Gary E.; Simi, Edward A.; and Miller, Richard R., 4,206,602, Cl. 60-433.000.
Millian, Stephen J.: *See*—
Kaul, Balkrishena; Davidow, Bernard; and Millian, Stephen J., 4,207,307, Cl. 424-1.000.
Minakuchi, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Frequency synthesizer. 4,207,539, Cl. 331-1.00A.
Minnesota Mining and Manufacturing Company: *See*—
Cobb, Sanford; Conder, Terrence M.; and Vanderwerf, Dennis F., 4,206,969, Cl. 350-126.000.
Groff, Gaylord L., 4,207,374, Cl. 428-261.000.
Hsu, Grace F., 4,207,148, Cl. 204-43.00S.
Krueger, Dennis L.; and Volgren, Richard L., 4,206,980, Cl. 350-359.000.
Schneider, John F., 4,206,751, Cl. 128-24.00R.
Snyder, Warren L., 4,207,393, Cl. 430-546.000.
Minolta Camera Kabushiki Kaisha: *See*—
Imura, Toshinori; and Yamanaka, Akira, 4,206,990, Cl. 354-195.000.
Kobori, Toshio; and Uchida, Isamu, 4,206,991, Cl. 354-225.000.
Miyamoto, Takayoshi; Egawa, Takeshi; and Yamazaki, Yasuo, 4,206,988, Cl. 354-152.000.
Nakatani, Keiji; and Suzuki, Hidenori, 4,207,473, Cl. 250-570.000.
Minoura, Mikio: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.
Minster Machine Company, The: *See*—
Hemmelgarn, Donald J., 4,206,699, Cl. 100-53.000.
Hemmelgarn, Donald J., 4,206,701, Cl. 100-257.000.
Mironova, Zinaida A.: *See*—
Danjushevskaya, Natalia E.; Alexeeva, Olga V.; Pogostkina, Bella G.; Kovalenko, Valentina M.; and Mironova, Zinaida A., 4,207,301, Cl. 423-305.000.
Miss, Herbert: *See*—
Kluczynski, Roman; and Miss, Herbert, 4,206,681, Cl. 84-411.00R.
Mitani, Yuji: *See*—
Sobajima, Shigenobu; Chiba, Kiyoshi; Itoh, Kunio; Yonemura, Utami; and Mitani, Yuji, 4,206,615, Cl. 62-248.000.
Mitchell, Arthur W. Chimney cowls. 4,206,693, Cl. 98-59.000.
Mitchell, Richard L.: *See*—
Brown, Henry M.; and Mitchell, Richard L., 4,206,837, Cl. 192-90.000.
Mitsche, Roy T.; and Pope, George N., to UOP Inc. Alkylaromatic isomerization using platinum group metal on extruded alumina support. 4,207,426, Cl. 585-482.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Asai, Koichi; Kawada, Tohsuke; Iwaki, Yoshiyuki; and Kuroda, Ryozo, 4,206,624, Cl. 72-131.000.
Ibuki, Koji, 4,207,447, Cl. 200-148.00R.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Kumagai, Kiyoshi; Awamura, Toshio; Aikawa, Kiyoshi; and Tatematsu, Tatsuo, 4,206,944, Cl. 296-76.000.
Mitsui Toatsu Chemicals, Incorporated: *See*—
Henmi, Zen-ichi; Arimoto, Shuichi; Kotaki, Akira; and Kitano, Takafumi, 4,207,339, Cl. 424-315.000.
Inoue, Shigeru; Shirasu, Tadao; and Miyagawa, Hisashi, 4,207,256, Cl. 260-555.00A.
Sugita, Yasunori; and Miyara, Yokichi, 4,207,063, Cl. 432-124.000.
Mittleman, John, to United States of America, Navy. Continuous oil concentration monitor. 4,207,450, Cl. 250-343.000.
Miyagawa, Fumiko, to Rex Industries Co., Ltd. Pipe cutting device. 4,206,664, Cl. 82-4.00C.
Miyagawa, Hisashi: *See*—
Inoue, Shigeru; Shirasu, Tadao; and Miyagawa, Hisashi, 4,207,256, Cl. 260-555.00A.
Miyamae, Ryuichi, to Sharp Kabushiki Kaisha. Pressure sensor which can compensate for temperature variation. 4,206,655, Cl. 73-708.000.
Miyamoto, Takayoshi; Egawa, Takeshi; and Yamazaki, Yasuo, to Minolta Camera Kabushiki Kaisha. Viewfinder for single lens reflex cameras. 4,206,988, Cl. 354-152.000.
Miyara, Yokichi: *See*—
Sugita, Yasunori; and Miyara, Yokichi, 4,207,063, Cl. 432-124.000.
Mizuno, Tiaki; and Kawashima, Yoshichi, to Nippondenso Co., Ltd. Control apparatus for vehicle directional lamps. 4,207,553, Cl. 340-73.000.
Mo och Domsjo Aktiebolag: *See*—
Haikkala, Pekka O.; and Lindahl, Jonas A. I., 4,207,139, Cl. 162-23.000.
Lindahl, Jonas A. I., 4,207,140, Cl. 162-23.000.
Lundgren, Rolf B., 4,206,841, Cl. 198-670.000.
Mobil Oil Corporation: *See*—
Butter, Stephen A.; Hanson, Francis V.; and Sherry, Howard S., 4,207,248, Cl. 260-449.60R.
Butter, Stephen A.; and Sherry, Howard S., 4,207,250, Cl. 260-449.60R.
Espenscheid, Wilton F.; and Yan, Tsoung Y., 4,207,117, Cl. 106-278.000.
Horodysky, Andrew G., 4,207,195, Cl. 252-46.600.
Lucki, Stanley J.; and Brennan, James A., 4,207,208, Cl. 252-455.00Z.
Mochizuki, Koichi: *See*—
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.
Mock, George H.: *See*—
Franke, Fritz R.; Hovey, Leonard L.; Mock, George H.; and Patterson, Andrew M., Jr., 4,207,151, Cl. 204-73.00R.
Moench, Frank F.; and Moench, Lawrence R. Heating and mixing apparatus for asphaltic pavement. 4,207,062, Cl. 432-111.000.
Moench, Lawrence R.: *See*—
Moench, Frank F.; and Moench, Lawrence R., 4,207,062, Cl. 432-111.000.
Mohar, Douglas D.: *See*—
Vermilyea, Barry L.; Crossen, Fred W., Jr.; and Mohar, Douglas D., 4,207,348, Cl. 426-95.000.
Moller, Eike; Meng, Karl-August, deceased (by Meng, Ilse H. F., heir); Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, to Bayer Aktiengesellschaft. 4-Substituted pyrazoles. 4,207,325, Cl. 424-273.00P.
Mollick, Milton: *See*—
Phillips, Harold H.; and Mollick, Milton, 4,206,643, Cl. 73-206.000.
Molloy, Bryan B.: *See*—
Lavagnino, Edward R.; McShane, Lawrence J.; and Molloy, Bryan B., 4,207,343, Cl. 424-330.000.
Molson Companies Limited, The: *See*—
Van Gheluwe, Joris E. A.; Valyi, Zoltan; Knudsen, Finn B.; and Dadic, Miroslav, 4,207,345, Cl. 426-11.000.
Molzahn, Herbert W.; and Stowell, Ronald, to International Harvester Company. Header lift arrangement for windrowers. 4,206,582, Cl. 56-15.800.
Monarch Marking Systems, Inc.: *See*—
Hamisch, Paul H., Jr., 4,207,131, Cl. 156-384.000.
Hamisch, Paul H., Jr., 4,207,132, Cl. 156-384.000.
Hamisch, Paul H., Jr., 4,207,365, Cl. 428-40.000.
Monsanto Company: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,207,404, Cl. 525-184.000.
Dahms, Ronald H., 4,207,400, Cl. 521-112.000.
Dahms, Ronald H., 4,207,401, Cl. 521-112.000.
Franke, Fritz R.; Hovey, Leonard L.; Mock, George H.; and Patterson, Andrew M., Jr., 4,207,151, Cl. 204-73.00R.
Heisner, Donald N.; and Bentivegna, Charles R., 4,207,470, Cl. 250-358.00T.
Maender, Otto W., 4,207,216, Cl. 260-5.000.
Sprenkle, William E., Jr., 4,207,402, Cl. 521-139.000.
Wolfinger, Mark D., 4,207,236, Cl. 548-183.000.
Montress, Gary K.: *See*—
Grudkowski, Thomas W.; Montress, Gary K.; and Reeder, Thomas M., 4,207,545, Cl. 333-150.000.
Moor, Vladimir A.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Moots, Paul C.: *See*—
Haak, Willard J.; Marsden, Howard A.; and Moots, Paul C., 4,206,688, Cl. 91-452.000.
Morgera, Salvatore D., to Raytheon Company. Oceanographic mapping system. 4,207,620, Cl. 367-88.000.
Mori, Fumio: *See*—
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,207,381, Cl. 428-619.000.
Mori, Masaharu: *See*—
Amazawa, Kiyoshi; and Mori, Masaharu, 4,207,432, Cl. 179-1.0GD.
Moriez, Marcel; and Delobel, Jacques, to Societe Europeene des Produits Refractories. Refractory lining element for a furnace or the like. 4,206,577, Cl. 52-405.000.
Morishita Pharmaceuticals Co. Ltd.: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.

Morishita, Yoji: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.

Moriya, Michio: *See*—
Sasaki, Kouji; Nakano, Seizo; and Moriya, Michio, 4,207,446, Cl. 200-148.00B.

Morozowich, Walter, to Upjohn Company, The. Inter-phenylene-13,14-dihydro-PG amides. 4,207,257, Cl. 260-558.00R.

Morris, John R.; and Grant, Robert L., to United States of America, Air Force. Electronic indirect measuring system. 4,207,594, Cl. 358-107.000.

Morrison, Howard J.; and Baer, Ralph H., to Marvin Glass & Associates. Microcomputer controlled game. 4,207,087, Cl. 273-1.00E.

Morrow, Lawrence R.: *See*—
Shiao, Daniel D.; and Morrow, Lawrence R., 4,207,392, Cl. 430-352.000.

Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, to Hooker Chemicals & Plastics Corp. Filter press cell. 4,207,165, Cl. 204-258.000.

Moskowitz, Paul M.; and Rushansky, Yuliy, to Salton, Inc. Infuser primarily intended for use in making coffee. 4,206,694, Cl. 99-295.000.

Motoren- und Turbinen-Union Munchen GmbH: *See*—
Bader, Eberhard, 4,206,776, Cl. 137-45.000.

Motorola, Inc.: *See*—
Arvanitis, Aristotelis S., 4,207,535, Cl. 329-118.000.
Cave, David L.; and Pace, Wilson D., 4,207,537, Cl. 330-253.000.
Gallagher, Lawrence W., 4,207,530, Cl. 455-174.000.
Townsend, Greg M., 4,207,474, Cl. 307-40.000.

Motosugi, Katsuhiko: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.

Moudgil, Brij M., to Occidental Research Corporation. Separation of magnesite from ores which also contain calcite or dolomite. 4,207,175, Cl. 209-3.300.

Mueller, Frank J.: *See*—
Davis, Jerry E.; Mueller, Frank J.; Novosel, Gerald W.; and Staab, Robert A., 4,207,197, Cl. 252-99.000.

Mueller, Hans-Richard: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, 4,207,243, Cl. 260-347.500.

Mueller, Herbert: *See*—
Hoffmann, Herwig; Mueller, Herbert; Toussaint, Herbert; and Wittwer, Arnold, 4,207,263, Cl. 260-583.00R.

Mueller, Otto, Jr.; and Elfes, Lee E., to Massey-Ferguson Inc. Draft sensing apparatus. 4,206,813, Cl. 172-7.000.

Mueller, Paul A., to Ed. Liesegang. Overhead projector. 4,206,984, Cl. 353-61.000.

Mueller, Paul A.: *See*—
Idelsohn, Jerome M.; Mueller, Paul A.; Freedman, M. David; Hebert, Raymond T.; and King, Edward A., 4,207,472, Cl. 250-563.000.

Muller, Eugenio E. Phenylisoquinoline derivatives as diagnostic agents. 4,207,309, Cl. 424-9.000.

Muller, Hans J.: *See*—
Traubel, Harro; Konig, Klaus; Muller, Hans J.; and Zorn, Bruno, 4,207,128, Cl. 156-77.000.

Muller, Niklaus: *See*—
Collaud, Jean-Michel; Girella, Albert; Herren, Maurice; Muller, Niklaus; and Piola, Roger, 4,207,032, Cl. 431-150.000.

Muller-Sybrichs, Manfred: *See*—
Kolb, Dieter; Kopp, Eugen; and Muller-Sybrichs, Manfred, 4,207,047, Cl. 425-146.000.

Muller, Werner; Eigel, Antonin; Schuetz, Hans-Jurgen; and Bunemann, Hans. Soluble complex former for the affinity specific separation of macromolecular substances, its preparation and its use. 4,207,200, Cl. 252-184.000.

Mumcu, Salih: *See*—
Burzin, Klaus; Mumcu, Salih; Feldmann, Rainer; Jadamus, Hans; and Feinauer, Roland, 4,207,410, Cl. 528-288.000.

Munch, Gerhard: *See*—
Furrer, Harald; Soder, Alfons; Komarek, Jaromir; Hinze, Heinz-Joachim; and Munch, Gerhard, 4,207,321, Cl. 424-253.000.

Muntean, George L.: *See*—
Perr, Julius P.; and Muntean, George L., 4,207,035, Cl. 417-407.000.

Murakami, Heiichiro: *See*—
Okamoto, Tsuneo; and Murakami, Heiichiro, 4,207,082, Cl. 55-60.000.

Murata Manufacturing Co.: *See*—
Ito, Katsuo; and Kontani, Kazuo, 4,207,549, Cl. 334-1.000.

Murata, Shigemoto: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.

Murayama, Noboru; Taniguchi, Hayashi; Konishi, Akira; and Matsuda, Hisashi, to Ricoh Company, Ltd. Run length encoding and decoding process and apparatus. 4,207,599, Cl. 358-261.000.

Murtazin, Khafiz M.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Jushunev, Marat N.; Garanin, Ernest M.; Kholin, Vladimir G.; and Murtazin, Khafiz M., 4,206,650, Cl. 73-421.00R.

Musto, Richard L., to Combustion Engineering, Inc. Venturi dispersing feeder. 4,206,555, Cl. 34-57.00R.

Myers, Harry K., Jr.: *See*—
Suld, George; Schneider, Abraham; and Myers, Harry K., Jr., 4,207,080, Cl. 585-22.000.

Myers, John E., to Owens-Corning Fiberglas Corporation. Method and apparatus for forming a wound strand package. 4,206,884, Cl. 242-18.00G.

Myojo Foods Co., Ltd.: *See*—
Takami, Yasushi, 4,206,854, Cl. 222-478.000.

Nafissi-Varchei, Mohammed M., to Schering Corporation. N-Carbomethoxy-N'-[2'-nitro-4'-propyloxyphenyl]-S-methyl-isothiourea and method of use thereof. 4,207,333, Cl. 424-300.000.

Nagaie, Akihiro, to Omron Tateisi Electronics Co. Electronic thermometer. 4,206,649, Cl. 73-362.0AR.

Nagayama, Akira: *See*—
Sasaoka, Hisashi; and Nagayama, Akira, 4,207,306, Cl. 318-620.000.

Nagayasu, Tadahito; and Higuchi, Tomitake, to Toray Industries, Inc. Antistatic filaments having an internal layer comprising carbon particles and process for preparation thereof. 4,207,376, Cl. 428-367.000.

Naimpally, Saiprasad V.; and Yost, Thomas D., to RCA Corporation. Combined phase shift filter network in a color video signal processing system employing dynamic flesh tone control. 4,207,590, Cl. 358-28.000.

Nakabayashi, Masahiro, to Union Carbide Corporation. High performance fused flux for submerged arc welding. 4,207,121, Cl. 148-26.000.

Nakagawa, Tsuto: *See*—
Kotoyori, Akira; and Nakagawa, Tsuto, 4,206,986, Cl. 354-1.000.

Nakaguti, Osamu: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.

Nakahara, Yasuyuki, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Tape-drive mode selecting and actuating mechanism for tape-recorder. 4,207,600, Cl. 360-71.000.

Nakai, Kaichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Microwave output section of an internal magnet type magnetron. 4,207,496, Cl. 315-39.530.

Nakajima, Fumito: *See*—
Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, 4,207,209, Cl. 252-462.000.

Nakajo, Yoshio: *See*—
Tsuda, Shinichi; Nakajo, Yoshio; Tagawa, Kenkichi; Hirai, Hayami; and Takagi, Shunji, 4,207,057, Cl. 432-59.000.

Nakamoto, Takayuki, to Iwata Electric Works Co., Ltd. Ring for mounting a rotary body to a shaft. 4,206,617, Cl. 64-13.000.

Nakamura, Hiroshi; Hanano, Naomasa; and Iguchi, Kazuo, to Fujitsu Limited. Optical communication system utilizing light emitting diode. 4,207,459, Cl. 455-513.000.

Nakamura, Soichi: *See*—
Hamanishi, Yoshinari; and Nakamura, Soichi, 4,206,971, Cl. 350-183.000.

Nakanishi, Tomohiko: *See*—
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.

Nakano, Seizo: *See*—
Sasaki, Kouji; Nakano, Seizo; and Moriya, Michio, 4,207,446, Cl. 200-148.00B.

Nakano, Takashi: *See*—
Hirata, Tadashi; and Nakano, Takashi, 4,206,667, Cl. 83-146.000.

Nakatani, Keiji; and Suzuki, Hidenori, to Minolta Camera Kabushiki Kaisha. Frame detection circuitry for microfilm reader apparatus. 4,207,473, Cl. 250-570.000.

Nakayama, Wataru: *See*—
Daikoku, Takahiro; Nakayama, Wataru; and Uede, Taisei, 4,207,550, Cl. 336-60.000.

National Research Development Corporation: *See*—
Platt, Adam S., 4,206,644, Cl. 250-231.00P.

National Semiconductor Corporation: *See*—
Dobkin, Robert C., 4,207,481, Cl. 307-310.000.

National Starch and Chemical Corporation: *See*—
Chiu, Chung-Wai; and Rutenberg, Morton W., 4,207,355, Cl. 426-578.000.

Nauta, Harry H. K.; Kok, Jan W.; and Harte, Jan, to Amax Inc. Process for producing purified ammonium molybdate solution. 4,207,296, Cl. 423-61.000.

Naylor, Florence A.: *See*—
Trimble, Lyne S.; and Naylor, Florence A., 4,206,866, Cl. 228-172.000.

Nazarov, Igor A.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.

Nefedov, Boris K.; Dergunov, Jury I.; Rysikhin, Anatoly I.; Manov-Juvensky, Vladimir I.; Balabanov, Georgy P.; and Khoshdurdyev, Khakberdy O. Catalyst for carbonylation of aromatic nitrocompounds. 4,207,212, Cl. 252-468.000.

NEGEA Energy Products, Inc.: *See*—
Semple, Joseph W., 4,206,874, Cl. 237-8.00C.

Nercessian, Sarkis, to Kepco, Inc. Efficient bipolar regulated power supply. 4,207,475, Cl. 307-52.000.

Nettman, Ernst F.; and Dexter, Ronald P., to Continental Camera Systems, Inc. Camera stabilizing body mount. 4,206,983, Cl. 352-243.000.

Neumann, Roger W. Pail and accessory transport apparatus. 4,206,529, Cl. 15-264.000.
Neumeyer, Charles L.; and Pietsch, Herbert E., to Westinghouse Electric Corp. Multilayered high voltage grading system for electrical conductors. 4,207,482, Cl. 310-45.000.
Nicholson, John. Baling apparatus. 4,206,698, Cl. 100-17.000.
Niedermeyer, William P. Solar energy collector. 4,206,747, Cl. 126-438.000.
Niemela, W. Wally. Heating apparatus. 4,206,743, Cl. 126-110.00B.
Niemiro, Thaddeus A., to Rockwell International Corporation. Sensing device for ink film thickness in printing presses. 4,207,003, Cl. 356-382.000.
Nikitopoulos, Robert: *See*—
Gunther, Philip B.; and Nikitopoulos, Robert, 4,207,389, Cl. 429-164.000.
Nikku Industry Co., Ltd.: *See*—
Taniguchi, Toru, 4,207,064, Cl. 432-145.000.
Nikolaenko, Arnold B.: *See*—
Izakson, Ilya S.; and Nikolaenko, Arnold B., 4,207,543, Cl. 333-17.00R.
Nilsson, Vilgot R., to Alfa-Laval AB. Leakage indicator for centrifuge. 4,206,871, Cl. 233-19.00R.
Nippon Carbide Kogyo Kabushiki Kaisha: *See*—
Sahara, Masao, 4,207,372, Cl. 428-220.000.
Nippon Dyeing Machine Manufacturing Co. Ltd.: *See*—
Fukuroi, Akio; Hayashi, Masanobu; Yamashita, Hiroshi; and Sugimoto, Isao, 4,206,619, Cl. 68-20.000.
Nippon Electric Co., Ltd.: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.
Sawai, Akira, 4,207,528, Cl. 375-20.000.
Sawai, Akira, 4,207,528, Cl. 375-20.000.
Takada, Masami, 4,207,521, Cl. 455-20.000.
Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Adachi, Takeshi; Koike, Masahiko; and Suzuki, Haruyuki, 4,206,676, Cl. 84-1.030.
Iyeta, Motoi, 4,207,463, Cl. 250-231.0SE.
Nippon Hoso Kyokai: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.
Nippon Kogaku K.K.: *See*—
Hamanishi, Yoshinari; and Nakamura, Soichi, 4,206,971, Cl. 350-183.000.
Nippon Piston Ring Co., Ltd.: *See*—
Asano, Kenji, 4,206,928, Cl. 277-15.000.
Nippon Suisan Kabushiki Kaisha: *See*—
Haga, Hiroshi; Shigeoka, Ritsuo; and Yamauchi, Takafumi, 4,207,354, Cl. 426-574.000.
Nippon Telegraph and Telephone Public Corporation: *See*—
Okada, Keiji; and Habara, Kohei, 4,207,435, Cl. 370-68.000.
Sasaoka, Hisashi; and Nagayama, Akira, 4,207,506, Cl. 318-620.000.
Sugiyama, Yoshi; and Kataoka, Keisuke, 4,207,556, Cl. 340-166.00R.
Nippondenso Co., Ltd.: *See*—
Kawasaki, Kenzo; and Itamoto, Shiuichi, 4,206,621, Cl. 72-130.000.
Mizuno, Tiaki; and Kawashima, Yoshichi, 4,207,553, Cl. 340-73.000.
Nishida, Shigeo: *See*—
Onoda, Seiichi; Kawakami, Shojiro; Nishida, Shigeo; Tanaka, Toshiki P.; Suganuma, Tsuneo; and Sumi, Masao, 4,206,967, Cl. 350-96.330.
Nissan Motor Company, Limited: *See*—
Kimura, Shinji; Takao, Hiroshi; Ishitani, Shigeo; Ikezawa, Kenji; and Sone, Koki, 4,207,159, Cl. 204-195.00S.
Nitro Nobel AB: *See*—
Ekman, Gunnar O., 4,207,126, Cl. 149-109.600.
Noce, Angelo J.: *See*—
Konrad, Kurt, 4,206,711, Cl. 110-238.000.
Nolley, John P., Jr., to UOP Inc. Heat recovery process for fired power plants. 4,206,722, Cl. 122-1.00A.
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., to Borg-Warner Corporation. Zero-valent rhodium catalysts and process of preparation. 4,207,213, Cl. 252-474.000.
Noranda Mines Limited: *See*—
Babin, Lucien, 4,207,147, Cl. 204-12.000.
Nordiskafilt AB: *See*—
Strandly, Ingvald, 4,206,787, Cl. 139-383.00A.
Normand Trust, The: *See*—
Mercier, Jacques H., 4,206,908, Cl. 267-8.00R.
Northern Telecom Limited: *See*—
Walling, Jorg-Hein, 4,206,790, Cl. 141-250.000.
Norton-Berry, Philip: *See*—
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,207,278, Cl. 264-46.400.
Novo Products, Inc.: *See*—
Smallegan, Jon M., 4,207,501, Cl. 315-159.000.
Novosel, Gerald W.: *See*—
Davis, Jerry E.; Mueller, Frank J.; Novosel, Gerald W.; and Staab, Robert A., 4,207,197, Cl. 252-99.000.
Nudo, Alexander S.; and Nudo, Thomas. Cargo-protecting drag-reducing adjustable wind-deflector for vehicles. 4,206,942, Cl. 296-1.00S.
Nudo, Thomas: *See*—
Nudo, Alexander S.; and Nudo, Thomas, 4,206,942, Cl. 296-1.00S.
Nyberg, David D., to Raychem Corporation. Heat-shrinkable laminate. 4,207,364, Cl. 428-36.000.
Nyson Group Marketing, Ltd.: *See*—
Dante, Lucian J., 4,206,904, Cl. 251-315.000.
Nysse, Karel J.; Beentjes, Hermanus J.; and Mancer, Terence A., to Batavian Rubber Company Limited. Inflatable product testing. 4,206,631, Cl. 73-40.000.
O & K Orenstein & Koppel Aktiengesellschaft: *See*—
Behle, Fritz, 4,206,708, Cl. 104-172.00B.
Oakes, Thomas M.: *See*—
Barnes, William; Gerstenberg, Roy W.; Kropa, Gomer E.; and Oakes, Thomas M., 4,206,882, Cl. 241-221.000.
Oberster, Arthur E.: *See*—
Cheng, Tai C.; Fieldhouse, John W.; Oberster, Arthur E.; and Graves, Daniel F., 4,207,403, Cl. 521-180.000.
Occidental Research Corporation: *See*—
Moudgil, Brij M., 4,207,175, Cl. 209-3.300.
Oce-van der Grinten N.V.: *See*—
Vola, Mathias J. J. M.; and Draai, Willem T., 4,207,101, Cl. 430-126.000.
Odawara, Masaru; Yoyama, Tadao; and Ohashi, Azusa, to Fuji Photo Film Co., Ltd. Positive working O-quinone diazide photocopying process with organic resin overlayer. 4,207,106, Cl. 430-165.000.
O'Dette, John H.; and Jack, Stanton E., to Alcan Research and Development Limited. Product and process for non-dusting, aluminum grain. 4,207,099, Cl. 75-251.000.
Oehmen, Gunter: *See*—
Diener, Arnulf; Meininghaus, Fritz; Oehmen, Gunter; and Schrott, Robert, 4,207,094, Cl. 75-60.000.
Oehrlein, Willard J.; and Engman, James C., to Gould Inc. One piece battery side terminal connector. 4,207,390, Cl. 429-179.000.
Ogawa, Iwakichi, to Takara Co., Ltd. Articulated reconfigurable robot doll. 4,206,564, Cl. 46-22.000.
Ohashi, Azusa: *See*—
Odawara, Masaru; Yoyama, Tadao; and Ohashi, Azusa, 4,207,106, Cl. 430-165.000.
Ohba, Toshihiro: *See*—
Yasuda, Shuhei; Ohba, Toshihiro; Suzuki, Chugi; Koba, Masayoshi; and Kudo, Jun, 4,207,617, Cl. 365-111.000.
Ohta, Shuichi: *See*—
Ozaki, Yoshio; and Ohta, Shuichi, 4,206,981, Cl. 352-14.000.
Ohuchida, Shuichi: *See*—
Hayashi, Masaki; Arai, Yoshinobu; Shimoji, Katsuichi; Konishi, Yoshitaka; Ohuchida, Shuichi; and Hashimoto, Shinsuke, 4,207,332, Cl. 424-285.000.
Okada, Hideo: *See*—
Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, 4,207,209, Cl. 252-462.000.
Okada, Keiji; and Habara, Kohei, to Nippon Telegraph and Telephone Public Corporation. Channel translators for use in time division digital exchangers. 4,207,435, Cl. 370-68.000.
Okamoto, Tsuneo; and Murakami, Heiichiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for the continuous purification of exhaust gas containing solvent vapors. 4,207,082, Cl. 55-60.000.
O'Keefe, Michael F.: *See*—
English, Keith H.; Forney, Edgar W., Jr.; and O'Keefe, Michael F., 4,206,963, Cl. 339-147.00R.
Oki Electric Industry Co., Ltd.: *See*—
Furusawa, Akira; and Udagawa, Yutaka, 4,207,448, Cl. 200-159.00B.
Oki, Toshikazu: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,207,313, Cl. 424-181.000.
Oku, Teruo: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.
Okuda, Hiroji, to Koyo Seiko Company Limited. Mooring apparatus. 4,206,717, Cl. 114-230.000.
Olander, Walter K., to General Electric Company. Process for preparing polyphenylene oxide copolymers. 4,207,406, Cl. 525-391.000.
Olez, Nejat A. Loop-tension joint. 4,206,895, Cl. 244-123.000.
Oliapuram, V. Anthony, to Varta Batterie Aktiengesellschaft. Negative, highly active iron electrode. 4,207,383, Cl. 429-48.000.
Olin Corporation: *See*—
Gay, Walter A., 4,207,089, Cl. 71-90.000.
Kadija, Igor V.; and French, Jimmy M., 4,207,152, Cl. 204-98.000.
Kadija, Igor V., 4,207,163, Cl. 204-253.000.
Kadija, Igor V., 4,207,164, Cl. 204-253.000.
Knollmueller, Karl O., 4,207,247, Cl. 556-463.000.
Rothgery, Eugene F., 4,207,090, Cl. 71-90.000.
Scardera, Michael; and Grosser, Frank R., 4,207,421, Cl. 568-625.000.
Turley, Richard J., 4,207,272, Cl. 260-967.000.
Oliver, Richard L.: *See*—
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., 4,207,353, Cl. 426-513.000.
Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Walter, Lothar, to SKF Kugellagerfabriken GmbH. Rotary drill bit with a porous cup bearing. 4,206,952, Cl. 308-8.200.
Olschewski, Armin: *See*—
Ernst, Horst; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,206,951, Cl. 308-6.00C.
Olsson, Billy E., to AMP Incorporated. Terminal device having improved retention means. 4,206,964, Cl. 339-221.00M.

Olympus Optical Co., Ltd.: *See*—
Goto, Atsuo, 4,206,977, Cl. 350-220.000.
Maeda, Haruo, 4,206,974, Cl. 350-215.000.
Maeda, Haruo, 4,206,975, Cl. 350-215.000.
Osanai, Akira, 4,206,982, Cl. 352-140.000.
Suzuki, Nobuyoshi, 4,207,074, Cl. 23-230.00R.

Omae, Tsutomu: *See*—
Marumoto, Katsuji; Kuriyama, Schigeru; and Omae, Tsutomu, 4,207,478, Cl. 307-240.000.

Omron Tateisi Electronics Co.: *See*—
Fukuyama, Toshifumi; and Onji, Norio, 4,207,464, Cl. 250-239.000.
Nagaie, Akihiro, 4,206,649, Cl. 73-362.0AR.

Omura, Yoshihiko, to Asahi Corporation. Motor driving system for remote controlled mobile toys. 4,207,502, Cl. 318-16.000.

Onaka, Hidemi: *See*—
Sato, Yasushi; and Onaka, Hidemi, 4,206,731, Cl. 123-119.00A.

Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Relieving hypertension with carboxyalkylacylamino acids. 4,207,336, Cl. 424-309.000.

Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Relieving hypertension with carboxyalkylacylamino acids. 4,207,337, Cl. 424-309.000.

Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Relieving hypertension with carboxyalkylacylamino acids. 4,207,342, Cl. 424-319.000.

Onji, Norio: *See*—
Fukuyama, Toshifumi; and Onji, Norio, 4,207,464, Cl. 250-239.000.

Ono, Masahiko, to Toppan Printing Co., Ltd. Method of printing cellulose fiber and polyester/cellulose mixed fiber. 4,207,069, Cl. 8-471.000.

Ono Pharmaceutical Co., Ltd.: *See*—
Hayashi, Masaki; Arai, Yoshinobu; Shimoji, Katsuichi; Konishi, Yoshitaka; Ohuchida, Shuichi; and Hashimoto, Shinsuke, 4,207,332, Cl. 424-285.000.

Onoda, Seiichi; Kawakami, Shojiro; Nishida, Shigeo; Tanaka, Toshiki P.; Suganuma, Tsuneo; and Sumi, Masao, to Hitachi, Ltd.; and Hitachi Cable, Ltd. Optical fiber. 4,206,967, Cl. 350-96.330.

Ontario Research Foundation: *See*—
Pilliar, Robert M., 4,206,516, Cl. 3-1.900.

Opie, Thomas R., to Rohm and Haas Company. Process for the preparation of trifluoromethylated aromatic compounds. 4,207,266, Cl. 260-651.00F.

Oppenlaender, Knut; Kindscher, Wolfgang; and Getto, Elmar, to BASF Aktiengesellschaft. Alkanolamine salts of maleamic acids as anti-corrosion agents in aqueous systems. 4,207,285, Cl. 422-16.000.

Orcutt, John W., to Texas Instruments Incorporated. Proportional stroke automatic temperature control system. 4,206,645, Cl. 73-349.000.

Ortlieb, Robert M.: *See*—
Schurfeld, Horst; Peters, Wolfgang; and Ortlieb, Robert M., 4,206,665, Cl. 82-36.00R.

Osanai, Akira, to Olympus Optical Co., Ltd. Camera. 4,206,982, Cl. 352-140.000.

Osborne, Robert D. Limited mobility sleeping bag. 4,206,512, Cl. 2-69.500.

Ostrowsky, Efrem M., to Ethyl Products Company. Tamperproof closure. 4,206,851, Cl. 215-246.000.

Otdel Fiziki Nerazrusha-Juschego Kontrolya Akademii Nauk Belorusskoi S.S.R.: *See*—
Zatsepin, Nikolai N.; and Gusev, Alexandr P., 4,207,519, Cl. 324-235.000.

Ott, Ernst: *See*—
Haake, Hinrich; Stampfer, Michael; Meier, Hubert; Franke, Reimar; Dalmer, Hans-Jurgen; Ott, Ernst; and Kienle, Josef, 4,206,581, Cl. 56-14.600.

Otto, Joachim, to Wilhelm Gail'sche Tonwerke KGaA. Ceramic veneer. 4,207,371, Cl. 428-212.000.

Owens-Corning Fiberglas Corporation: *See*—
Foster, Charles R., 4,206,855, Cl. 222-482.000.
Heitmann, Arthur C.; and Eisenberg, Arnold J., 4,207,086, Cl. 65-1.000.
Myers, John E., 4,206,884, Cl. 242-18.00G.

Owens-Illinois, Inc.: *See*—
Tobias, John W.; and Taylor, Lynn J., 4,207,221, Cl. 260-28.50R.

Oxy Metal Industries Corporation: *See*—
Creutz, Hans G., deceased; Martin, Sylvia; Saez, Debra J.; and Herr, Roy W., 4,207,150, Cl. 204-55.00R.

Oy Alko AB: *See*—
Ronkainen, Pentti P.; Leppanen, Olavi A.; Vento, Kyosti T.; and Pesonen, Heimo K., 4,207,276, Cl. 261-114.00A.

Ozaki, Yoshio; and Ohta, Shuichi, to Sony Corporation. Telecine projector. 4,206,981, Cl. 352-14.000.

Ozgener, Cano A. Tobacco tamping tool for smoking pipe. 4,206,770, Cl. 131-247.000.

P.E.P. Associates: *See*—
Pavano, Robert J., 4,207,135, Cl. 156-502.000.

P. R. Mallory & Co. Inc.: *See*—
Gunther, Philip B.; and Nikitopoulos, Robert, 4,207,389, Cl. 429-164.000.

Pace, Joseph. Lineman snake gripper. 4,206,663, Cl. 81-311.000.

Pace, Wilson D.: *See*—
Cave, David L.; and Pace, Wilson D., 4,207,537, Cl. 330-253.000.

Paddison, Richard L.: *See*—
Sheppard, Thomas H.; and Paddison, Richard L., 4,206,935, Cl. 280-723.000.

Padovani, Francois A., to Texas Instruments Incorporated. Silicon seed production process. 4,207,360, Cl. 427-213.000.

Pai, Panemangalore S.: *See*—
Petersen, Harro; Pai, Panemangalore S.; and Reichert, Manfred, 4,207,073, Cl. 8-187.000.

Pallos, Ferenc M., to Stauffer Chemical Company. Acylformamidine insecticidal and miticidal compounds. 4,207,334, Cl. 424-300.000.

Palm, Bernhard, to Black & Decker Inc. Power driven tool having a reciprocating shaft arrangement and method of assembly. 4,206,657, Cl. 74-50.000.

Pankonien, Gary W. Marine speedometer. 4,206,637, Cl. 73-187.000.

Pappas, Michael J.; and Buechel, Frederick F., to Biomedical Engineering Corp. Floating center prosthetic joint. 4,206,517, Cl. 3-1.910.

Parker, Robert P., to RCA Corporation. Gated automatic beam current limiter in a video signal processing system. 4,207,591, Cl. 358-34.000.

Parks, Thomas R.: *See*—
D'Atri, John J.; Swidler, Ronald; Colwell, Judith J.; and Parks, Thomas R., 4,207,347, Cl. 426-92.000.

Pascoe, Robert A., to International Business Machines Corporation. Line spacing and column format control system. 4,207,011, Cl. 400-279.000.

Passey, Ronald W., to S. Davall & Sons Limited. Navigational aids. 4,207,571, Cl. 343-112.00R.

Pastorino, Hector F.; and De Meurville, Manuel D. P. Process for reducing metal oxide containing ores. 4,207,093, Cl. 75-26.000.

Patel, Raman: *See*—
Coran, Aubert Y.; and Patel, Raman, 4,207,404, Cl. 525-184.000.

Patterson, Andrew M., Jr.: *See*—
Franke, Fritz R.; Hovey, Leonard L.; Mock, George H.; and Patterson, Andrew M., Jr., 4,207,151, Cl. 204-73.00R.

Pavano, Robert J., to P.E.P. Associates. Kit apparatus for making O-rings. 4,207,135, Cl. 156-502.000.

Paxall, Inc.: *See*—
Woxland, Robert J., 4,206,579, Cl. 53-484.000.

Pearson, Rune S., to Wertheimer, Joseph. Paper sensing mechanism. 4,206,912, Cl. 271-154.000.

Pearson, William S., to Cypro, Incorporated. Apparatus for controlling liquid level in a reservoir. 4,207,030, Cl. 417-7.000.

Pedersen, Peder C., to Drexel University. Ultrasonic scanner for breast cancer examination. 4,206,763, Cl. 128-660.000.

Pegnim, Timothy C., to Cambridge Instrument Company, Inc. Dissolved oxygen analyzer. 4,207,161, Cl. 204-195.00P.

Peiffert, Jean; and Barbedienne, Roger S. Line-trace read-out method and device for the servo-control of machine tools. 4,207,462, Cl. 250-202.000.

Pelensky, Joseph; and Tallerico, William A., to Graphic Controls Corporation. Recording instrument marker mounting assembly and precision adjustment control knob therefor. 4,207,581, Cl. 346-139.00R.

Pennwalt Corporation: *See*—
DaCosta, Dominick P., 4,206,862, Cl. 226-178.000.

Perez, Ricardo L.; Barnum, Ronald E.; and Tefft, Franklin A., to United Technologies Corporation. Helicopter pedal feel force proportional to side slip. 4,206,891, Cl. 244-17.130.

Perfection Manufacturing Company, The: *See*—
Lee, Cleve L., 4,206,914, Cl. 272-73.000.

Perlich, Wayne A., to RCA Corporation. Frequency signal splitting circuit. 4,207,532, Cl. 455-339.000.

Perner, Johannes; and Helfert, Herbert, to BASF Aktiengesellschaft. Solid cold bleach activators for detergents and cleaning agents containing an active oxygen donor. 4,207,199, Cl. 252-174.130.

Perr, Julius P.; and Rosselli, Andrew C., to Cummins Engine Company, Inc. Adjustable timing mechanism for fuel injection system. 4,206,734, Cl. 123-139.0AP.

Perr, Julius P.; and Muntean, George L., to Cummins Engine Company, Inc. Turbocharger assembly. 4,207,035, Cl. 417-407.000.

Pertec Computer Corporation: *See*—
Desai, Ashok K.; Brand, Abraham; Dunstan, Eric M.; and Marinello, Raymond J., 4,207,601, Cl. 360-78.000.

Pervushin, Evgeny S.: *See*—
Berber, Viktor A.; Pervushin, Evgeny S.; Jushunev, Marat N.; Garanin, Ernest M.; Kholin, Vladimir G.; and Murtazin, Khafiz M., 4,206,650, Cl. 73-421.00R.

Pesonen, Heimo K.: *See*—
Ronkainen, Pentti P.; Leppanen, Olavi A.; Vento, Kyosti T.; and Pesonen, Heimo K., 4,207,276, Cl. 261-114.00A.

Peters, Kenneth; and Culpin, Barry, to Chloride Group Limited. Electric storage batteries. 4,207,384, Cl. 429-54.000.

Peters, Wolfgang: *See*—
Schurfeld, Horst; Peters, Wolfgang; and Ortlieb, Robert M., 4,206,665, Cl. 82-36.00R.

Petersen, Harro; Pai, Panemangalore S.; and Reichert, Manfred, to BASF Aktiengesellschaft. Textile finish and processes for its preparation and use. 4,207,073, Cl. 8-187.000.

Petersohn, Gerhard; von der Eltz, Hans-Ulrich; Birke, Walter; and Schon, Franz, to Bruckner Apparatebau GmbH. Apparatus for drying a continuously moving web. 4,207,058, Cl. 432-59.000.

Peterson, Wayne A., to Caterpillar Tractor Co. Priority system. 4,206,689, Cl. 91-516.000.

Peyrard, Jean-Marc: *See*—
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., 4,207,008, Cl. 366-309.000.

Pfahler, Gerhard: *See*—
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Church, Peter K.; and Phillips, Alan G., 4,207,391, Cl. 429-229.000.
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Bradshaw, Ralph W., 4,207,167, Cl. 208-68.000.
Favre, John A.; and Schmidt, Thomas W., 4,207,465, Cl. 250-288.000.
Johnson, Paul H., 4,207,358, Cl. 427-185.000.
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McCarthy, William C.; and Goard, Howard W., 4,207,179, Cl. 210-7.000.
McKay, Dwight L.; and Bertus, Brent J., 4,207,204, Cl. 252-411.00R.
Shue, Robert S., 4,207,411, Cl. 528-338.000.
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West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,207,280, Cl. 264-153.000.
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Pilliar, Robert M., to Ontario Research Foundation. Surgical prosthetic device or implant having pure metal porous coating. 4,206,516, Cl. 3-1.900.
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Pioneer Electronic Corporation: *See*—
Sohma, Hiroshi; and Tanno, Toshihiro, 4,206,830, Cl. 181-141.000.
Pires, H. George, to Crosspoint Latch Corp. Video special effects with cascaded control logic. 4,207,596, Cl. 358-182.000.
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Kunzer, John J., 4,207,558, Cl. 340-524.000.
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Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Platt, Adam S., to National Research Development Corporation. Respiration sensors. 4,206,644, Cl. 250-231.00P.
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Markey, John J.; and Farnhill, William M., 4,206,589, Cl. 57-293.000.
Plaza, Mario G., to Xerox Corporation. Easy-load record material feed apparatus. 4,206,859, Cl. 226-74.000.
Plempel, Manfred: *See*—
Kramer, Wolfgang; Buchel, Karl H.; Plempel, Manfred; Brandes, Wilhelm; and Frohberger, Paul-Ernst, 4,207,328, Cl. 424-273.00R.
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Ward, Robert A., 4,207,429, Cl. 174-88.00R.
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Danjushevskaya, Natalia E.; Alexeeva, Olga V.; Pogostkina, Bella G.; Kovalenko, Valentina M.; and Mironova, Zinaida A., 4,207,301, Cl. 423-305.000.
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Dunn, Lloyd G.; and Pohlenz, Elmer E., 4,206,852, Cl. 215-252.000.
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Pollock, John R. Vine pruning means and method. 4,206,585, Cl. 56-235.000.
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Wurr, Jurgen; and Korting, Reinhard, 4,206,836, Cl. 192-7.000.
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Pope, George N.: *See*—
Mitsche, Roy T.; and Pope, George N., 4,207,426, Cl. 585-482.000.
Porter, Maxwell R.; Sciffer, Jack P.; Adamiak, Zigmunt P.; and Dim, Alexander, to Australian Wire Industries Proprietary Limited. Method of and apparatus for wiping hot dipped metal coated wire or strip. 4,207,362, Cl. 427-367.000.
Post Office, The: *See*—
Cosier, James E. H.; and Jenkins, Peter D., 4,207,428, Cl. 174-70.00S.
Power Control Corporation: *See*—
Hess, John S., Jr., 4,207,513, Cl. 320-23.000.
Powers, Howard A., to Econics Corporation. Sample chamber for gas analyzer. 4,206,630, Cl. 73-1.00G.
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Hammond, Leonard B.; and Hammond, George B., 4,206,536, Cl. 29-402.110.
President and Fellows of Harvard College: *See*—
Kasper, Dennis L., 4,207,414, Cl. 536-1.000.
Preusser, Gerhard; Dutz, Karl-Heinz; and Goeke, Eberhard, to Krupp-Koppers GmbH. Process for gasifying fine grained and dust-like solid fuels. 4,207,081, Cl. 48-210.000.
Prigge, James D. Outdoor grill. 4,206,741, Cl. 126-25.00A.
Procter & Gamble Company, The: *See*—
Davis, Jerry E.; Mueller, Frank J.; Novosel, Gerald W.; and Staab, Robert A., 4,207,197, Cl. 252-99.000.
Promis, George G., Jr.: *See*—
Clark, Gary A.; Johnson, Frederick W.; and Promis, George G., Jr., 4,206,996, Cl. 355-14.00C.
Prontor-Werk Alfred Gauthier GmbH: *See*—
Theurer, Richard; and Rittmann, Dieter, 4,206,992, Cl. 354-235.000.
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Schuller, James J., 4,207,020, Cl. 414-378.000.
Spence, John H., 4,206,710, Cl. 105-420.000.
Purchase, Francis J. Radio coupled device for detecting and analyzing weak transmissions. 4,207,524, Cl. 375-22.000.
Pusch, Gerhard, to Erwin Hengstler Fabrik Hydraulischer Hebezeuge. Hydraulic turning device for a turn plow. 4,206,685, Cl. 91-356.000.
Quad Corporation: *See*—
DeVries, Egbert, 4,206,870, Cl. 229-62.500.
Queen's University at Kingston: *See*—
Szarek, Walter A.; and Jones, John K. N., deceased, 4,207,413, Cl. 536-1.000.
Quevedo, Leonel. Fish trap. 4,206,562, Cl. 43-102.000.
Radtke, Gerald W., to Ford Motor Company. Circuit for constant voltage power source. 4,207,511, Cl. 320-6.000.
Raev, Boris S.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Rainey, Rhett K. Cauterizing system. 4,206,843, Cl. 206-216.000.
Ralph M. Parsons Company, The: *See*—
Beavon, David K., 4,207,304, Cl. 423-569.000.
Ramsey, Vernon B., to Teledyne Industries, Inc. Pedal actuator for electronic player piano. 4,206,677, Cl. 84-107.000.
Randell, Donald R.; Hyde, Thomas G.; Lamb, Frank; Clubley, Brian G.; and Davis, Boyce I. D., to Ciba-Geigy AG. Plastics composition. 4,207,224, Cl. 260-30.60R.
Randolph, Joe G. Weed sprayer. 4,206,569, Cl. 47-1.700.
Rank Xerox, Ltd.: *See*—
Tsuda, Shinichi; Nakajo, Yoshio; Tagawa, Kenkichi; Hirai, Hayami; and Takagi, Shunji, 4,207,057, Cl. 432-59.000.
Rao, G. R. Mohan, to Texas Instruments Incorporated. Silicon gate MOS ROM. 4,207,585, Cl. 357-41.000.
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White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,207,618, Cl. 365-222.000.
Rao, Vemulapalli D. N.; and Jaimee, Angelo, to Ford Motor Company. Low cost cast-in place port liner. 4,206,598, Cl. 60-282.000.
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., to Union Carbide Corporation. Food casing and method of preparing same. 4,207,353, Cl. 426-513.000.
Rasmussen, Ole-Bendt. Extrusion apparatus involving rotations. 4,207,045, Cl. 425-133.100.
Rathband, Clive A.; Washbourn, Jack; and Wickham, David J., to Westinghouse Brake & Signal Co. Ltd. Continuous quick service valves for braking systems. 4,206,949, Cl. 303-38.000.
Ratzlaff, Alvin E. Dumping bulldozing assembly for a farm tractor. 4,206,819, Cl. 172-801.000.
Rauchwerger, George P. Electrically heated high speed de-soldering tool. 4,206,864, Cl. 228-20.000.
Ray, Gilbert W.; and Brinkley, Max D., to Goodyear Tire & Rubber Company, The. Apparatus for forming traction grooves in the uncured tread of a heavy off-highway tire and method therefore. 4,206,798, Cl. 157-13.000.
Raychem Corporation: *See*—
Nyberg, David D., 4,207,364, Cl. 428-36.000.
Wetmore, Judson D., 4,206,786, Cl. 138-178.000.
Raytheon Company: *See*—
Morgera, Salvatore D., 4,207,620, Cl. 367-88.000.
Razinsky, Elias H.: *See*—
Kuziak, William R., Jr.; Razinsky, Elias H.; and Yu, Mason K., 4,206,596, Cl. 60-39.16R.
RCA Corporation: *See*—
Abt, Richard F., 4,207,526, Cl. 455-110.000.
Abt, Richard F., 4,207,527, Cl. 455-110.000.
Babcock, William E., 4,207,516, Cl. 323-9.000.
Forster, Gerhard, 4,207,493, Cl. 315-3.000.
Gibson, Walter G.; and Liu, Frank C., 4,207,597, Cl. 358-195.100.
Giger, Robert J., 4,207,603, Cl. 361-56.000.
Goel, Jitendra, 4,207,538, Cl. 330-277.000.
Harwood, Leopold A., 4,207,592, Cl. 358-34.000.
Hitch, Thomas T., 4,207,138, Cl. 156-642.000.
Miller, Arthur, 4,207,000, Cl. 356-33.000.
Naimpally, Saiprasad V.; and Yost, Thomas D., 4,207,590, Cl. 358-28.000.
Parker, Robert P., 4,207,591, Cl. 358-34.000.
Perlich, Wayne A., 4,207,532, Cl. 455-339.000.
Ross, Daniel L., 4,207,107, Cl. 430-165.000.
Stave, Frederick R., 4,206,926, Cl. 274-9.00B.
Tuska, James W.; and Robbi, Anthony D., 4,206,648, Cl. 73-362.0AR.

Upadhyayula, Lakshminarasimha C., 4,207,476, Cl. 307-216.000.
RCA Limited: *See—*
Tam, Sebastian Y. K.; and Ghosh, Asoke K., 4,207,499, Cl. 315-111.100.
Realty & Industrial Corporation: *See—*
Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., 4,207,612, Cl. 364-900.000.
Reavill, Joseph A., to General Dynamics Pomona Division. Solder preform loading method and apparatus. 4,206,542, Cl. 29-877.000.
Redken Laboratories, Inc.: *See—*
Tyson, Donald R.; and Yates, Robert W., 4,206,966, Cl. 350-19.000.
Reed, William G.; Mazer, Jack S.; and Shade, Russell L., Jr., to General Electric Company. Moisture separator reheater with thermodynamically enhanced means for substantially eliminating condensate subcooling. 4,206,802, Cl. 165-1.000.
Reeder, Thomas M.: *See—*
Grudkowski, Thomas W.; Montress, Gary K.; and Reeder, Thomas M., 4,207,545, Cl. 333-150.000.
Reese, William C. Ratchet driver. 4,206,794, Cl. 145-75.000.
Reeves Brothers, Inc.: *See—*
Boon, Derk J., 4,207,279, Cl. 264-54.000.
Regan, Michael E. Stored collapsible bag for extension about a tree for disposal of the tree. 4,206,795, Cl. 150-52.00R.
Regie Nationale des Usines Renault: *See—*
de Rosa, Daniel, 4,206,887, Cl. 242-107.40A.
Reich, Hans; and Bajohr, Ekkehard, to International Standard Electric Corporation. Automatic mail sending system. 4,207,598, Cl. 358-257.000.
Reich, Steven. Rotary Stirling cycle machine. 4,206,604, Cl. 60-518.000.
Reichert, Manfred: *See—*
Petersen, Harro; Pai, Panemangalore S.; and Reichert, Manfred, 4,207,073, Cl. 8-187.000.
Reid, David L.: *See—*
Taylor, Dennis O.; Reid, David L.; Kincaid, Clarence E.; and Haefner, Donald R., 4,206,634, Cl. 73-119.00A.
Reinke, Paul E.: *See—*
Miles, Donald L.; and Reinke, Paul E., 4,206,735, Cl. 123-139.0AW.
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Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.
Research Corporation: *See—*
Kaul, Balkrishena; Davidow, Bernard; and Millian, Stephen J., 4,207,307, Cl. 424-1.000.
Research Triangle Institute: *See—*
Coover, Stephen R., 4,207,471, Cl. 250-377.000.
Resnick, Jerome B.; and Combs, John W., to Med-El Inc. Method and apparatus for automated classification and analysis of cells. 4,207,554, Cl. 340-146.3CA.
Resources Conservation Company: *See—*
Herrigel, Howard R., 4,207,183, Cl. 210-23.00H.
Rex Industries Co., Ltd.: *See—*
Miyagawa, Fumiko, 4,206,664, Cl. 82-4.00C.
Reynolds, Clifton J.; and Shultz, Ralph H., Jr., to Aerojet-General Corporation. Inflatable fan housing. 4,207,025, Cl. 415-200.000.
Reynolds, William T.; and Foster, Karl, to Westinghouse Electric Corp. Coatings for reduced losses in (110) [001] oriented silicon iron. 4,207,123, Cl. 148-113.000.
Rheinmetall GmbH: *See—*
Ringelhan, Wolfgang, 4,206,683, Cl. 89-28.00A.
Rhone-Poulenc Industries: *See—*
Marze, Xavier, 4,207,182, Cl. 210-23.00F.
Rhone-Poulenc-Textile: *See—*
Isoard, Bernard, 4,206,883, Cl. 242-18.00G.
Ricard, Claude F. F.; Chouard, Claude-Henri; and MacLeod, Patrick, to Bertin & Cie. Auditory prosthesis equipment. 4,207,441, Cl. 179-107.00R.
Richardson Company, The: *See—*
Jutte, Gottfried W., 4,207,387, Cl. 429-88.000.
Richardson Manufacturing Company, Inc.: *See—*
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., 4,206,816, Cl. 172-311.000.
Richardson, Raymond W.; Burda, Robert E.; and Crumrine, John C., to Richardson Manufacturing Company, Inc. Folding flexible undercutter plow. 4,206,816, Cl. 172-311.000.
Richardt, Urban: *See—*
Groos, Horst H.; Richardt, Urban; and Hoffmeier, Siegfried, 4,206,626, Cl. 72-265.000.
Richter, Carl; and Feth, Georg, to Cilag-Chemie A.G. Antimicrobial quaternary pyrazole derivatives. 4,207,326, Cl. 424-273.00P.
Ricoh Company, Ltd.: *See—*
Murayama, Noboru; Taniguchi, Hayashi; Konishi, Akira; and Matsuda, Hisashi, 4,207,599, Cl. 358-261.000.
Ridder, Sven O. Extendable and retractable propeller for watercraft. 4,207,028, Cl. 416-142.000.
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Sze, Morgan C.; Riegel, Herbert; and Schindler, Harvey D., 4,207,268, Cl. 260-659.00R.
Riener, Edward F., to Rohm and Haas Company. Process for preparing physically stable quaternary ammonium anion exchange resins by chloromethylation and amination in the absence of additional organic solvent. 4,207,398, Cl. 521-31.000.
Rijsdijk, Jan, to Volvo Car B.V. Variable V-belt drive for a vehicle. 4,206,659, Cl. 74-230.17E.
Riley, Leon H., to United States of America, Army. Integral electric generator, multiplexer, data acquisition system. 4,207,434, Cl. 370-112.000.
Ringel, Reginald K.: *See—*
Beckham, Joel M.; Easterling, Gene B.; Ringel, Reginald K.; and Wolff, Egon E., 4,206,818, Cl. 172-781.000.
Ringelhan, Wolfgang, to Rheinmetall GmbH. Electrical firing system for weapons. 4,206,683, Cl. 89-28.00A.
Riordan, Mathew B., to Eastman Whipstock, inc. Stator for a downhole fluid operated motor and method of assembling the same. 4,207,037, Cl. 418-48.000.
Rittmann, Dieter: *See—*
Theurer, Richard; and Rittmann, Dieter, 4,206,992, Cl. 354-235.000.
Rivier, Jean E. F.: *See—*
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Rizzi, Primo: *See—*
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Robbi, Anthony D.: *See—*
Tuska, James W.; and Robbi, Anthony D., 4,206,648, Cl. 73-362.0AR.
Robert Bosch GmbH: *See—*
Irschik, Heinz; Kipp, Dieter; and Harer, Helmut, 4,207,503, Cl. 318-139.000.
Robertshaw Controls Company: *See—*
Manecke, Siegfried E.; and Buckshaw, Thomas M., 4,206,780, Cl. 137-387.000.
Sliger, Boyd P., 4,206,873, Cl. 236-34.500.
Robins, Charles T., to Gould Inc. Safety shield for terminal. 4,207,449, Cl. 200-308.000.
Robinson, James D. Athletic sock. 4,206,515, Cl. 2-241.000.
Roche, Gilbert C.: *See—*
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Rockwell International Corporation: *See—*
Dentino, Mauro J.; Huey, Harry M.; and Letendre, Toni, 4,207,624, Cl. 367-135.000.
Niemiro, Thaddeus A., 4,207,003, Cl. 356-382.000.
Williams, William J., 4,206,834, Cl. 188-341.000.
Rohm and Haas Company: *See—*
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Opie, Thomas R., 4,207,266, Cl. 260-651.00F.
Riener, Edward F., 4,207,398, Cl. 521-31.000.
Rolligon Corporation: *See—*
Holland, John G., Sr., 4,206,797, Cl. 152-353.00R.
Rollins, Dallas W.: *See—*
Jantzen, Steven L.; and Rollins, Dallas W., 4,206,709, Cl. 105-243.000.
Rolls-Royce Limited: *See—*
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Ronkainen, Pentti P.; Leppanen, Olavi A.; Vento, Kyosti T.; and Pesonen, Heimo K., to Oy Alko AB. Easily maintained bubble-cap column for the distillation of clogging and high-sediment liquids. 4,207,276, Cl. 261-114.00A.
Rooney, Clarence S.: *See—*
Williams, Haydn W. R.; Cragoe, Edward J., Jr.; and Rooney, Clarence S., 4,207,329, Cl. 424-274.000.
Ross, Daniel L., to RCA Corporation. Novel ortho-quinone diazide photoresist sensitizers. 4,207,107, Cl. 430-165.000.
Rosselli, Andrew C.: *See—*
Perr, Julius P.; and Rosselli, Andrew C., 4,206,734, Cl. 123-139.0AP.
Roth, Robert G., to Anderson-Cook, Inc. Loader for gear burnishing machine. 4,206,535, Cl. 29-90.00B.
Rothgery, Eugene F., to Olin Corporation. Amino ester derivatives of 3-trihalomethyl-1,2,4-thiadiazoles and their use as herbicides. 4,207,090, Cl. 71-90.000.
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Grandadam, Jean A.; Benet, Daniel; and Jobard, Alain, 4,206,757, Cl. 128-260.000.
Jolly, Jean; Matra, Bernard; and Rizzi, Primo, 4,207,240, Cl. 260-340.9AS.
Rowlands, David A.; and Taylor, John B., 4,207,318, Cl. 424-248.400.
Rowlands, David A.; and Taylor, John B., to Roussel Uclaf. Novel imidazobenzoxazines. 4,207,318, Cl. 424-248.400.
Rowley, Stephen K., II, to Ford Motor Company. Latch assembly for vent windows and the like. 4,206,939, Cl. 292-263.000.
Rudert, Wolfgang: *See—*
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Rudolphy, Albert, to Hoechst Aktiengesellschaft. Process for the preparation of partial esters and partial salts of reaction products of natural resinic acids and dicarboxylic acid compounds. 4,207,219, Cl. 260-25.000.
Ruedemann, Albert D., Jr.: *See—*
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Ruggeri, Albert; Ruggeri, Joseph; and Lawrence, Harry, to Lab Products, Inc. Animal cage rack incorporating shelf leveling device. 4,206,720, Cl. 119-17.000.
Ruggeri, Joseph: *See—*
Ruggeri, Albert; Ruggeri, Joseph; and Lawrence, Harry, 4,206,720, Cl. 119-17.000.

Runnells, Robert R.; Schmoegner, John C.; Larsen, Roland G.; and De La Mare, Robert A., to MDT Instrument Company. Track system. 4,206,546, Cl. 433-79.000.

Rushansky, Yuliy: *See*—
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Russ, Karl J.; and Broughton, Donald R., to United Catalysts Inc. Catalyst for steam reforming of hydrocarbons and process of preparing the catalyst. 4,207,211, Cl. 252-466.00J.

Russell, Diane H.: *See*—
Voorhees, John J.; and Russell, Diane H., 4,207,315, Cl. 424-200.000.

Rutenberg, Morton W.: *See*—
Chiu, Chung-Wai; and Rutenberg, Morton W., 4,207,355, Cl. 426-578.000.

Ryason, Porter R., to United States of America, National Aeronautics and Space Administration. Continuous coal processing method. 4,206,713, Cl. 110-347.000.

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Nefedov, Boris K.; Dergunov, Jury I.; Rysikhin, Anatoly I.; Manov-Juvensky, Vladimir I.; Balabanov, Georgy P.; and Khoshdurdyev, Khakberdy O., 4,207,212, Cl. 252-468.000.

S. Davall & Sons Limited: *See*—
Passey, Ronald W., 4,207,571, Cl. 343-112.00R.

Sabo, Paul F.; and Spicer, Margaret B. Nail polish machine. 4,206,556, Cl. 34-90.000.

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Safonnikov, Anatoly N.; Sinchuk, Anatoly G.; and Antonov, Anatoly V., to Institut Elektrosvarki Imeni E.O. Patona Akademii Nauk Ukrainskoi SSR. Method for electroslag welding of metals. 4,207,454, Cl. 219-73.100.

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Ackermann, Werner; and Vollhardt, Frohmut, 4,207,065, Cl. 432-195.000.

Sahara, Masao, to Nippon Carbide Kogyo Kabushiki Kaisha. Destructible films for marking, process for their production, and their utilization. 4,207,372, Cl. 428-220.000.

Saito, Yoshihisa: *See*—
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Sakawaki, Shinichi: *See*—
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Salk Institute for Biological Studies, The: *See*—
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Salter, Colin J., to Salter Support Systems. Spring supports. 4,206,898, Cl. 248-561.000.

Salter, Jack N. Self-actuated flow control valve. 4,206,781, Cl. 137-504.000.

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Salter, Colin J., 4,206,898, Cl. 248-561.000.

Salton, Inc.: *See*—
Moskowitz, Paul M.; and Rushansky, Yuliy, 4,206,694, Cl. 99-295.000.

Salvino, Lawrence P. Portable device for supporting a roll of sheeting for dispensing. 4,206,885, Cl. 242-55.000.

Samrowski, Dietrich: *See*—
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,207,246, Cl. 556-439.000.

Sanada, Masakatsu; and Ito, Toshimitsu, to Toyota Jidosha Kogyo Kabushiki Kaisha. Float chamber means for a carburetor. 4,207,277, Cl. 261-130.000.

Sanchez, Ramiro; Fannin, Loyd W.; and Malpass, Dennis B., to Texas Alkyls, Inc. Hydrocarbon soluble magnesium compositions of high magnesium content. 4,207,207, Cl. 252-431.00R.

Sanctuary, Robert E.: *See*—
Gonzalez, Ricardo; Sumner, Charles A.; and Sanctuary, Robert E., 4,206,686, Cl. 91-386.000.

Sandstrom, Wayne R. Water line terminator. 4,206,779, Cl. 137-360.000.

Santhanam, Chakra J., to Arthur D. Little, Inc. Method and apparatus for transporting coal as a coal/liquid carbon dioxide slurry. 4,206,610, Cl. 62-55.000.

Saroy Engineering: *See*—
Husted, Royce H., 4,206,828, Cl. 180-184.000.

Sasaki, Kouji; Nakano, Seizo; and Moriya, Michio, to Hitachi, Ltd. Grounded tank type gas circuit breaker. 4,207,446, Cl. 200-148.00B.

Sasaki, Takashi: *See*—
Fujiwhara, Mitsuto; Sasaki, Takashi; and Uchida, Takashi, 4,207,111, Cl. 430-376.000.

Sasaoka, Hisashi; and Nagayama, Akira, to Nippon Telegraph and Telephone Public Corporation. Servo system with reduction of transient error and settling time. 4,207,506, Cl. 318-620.000.

Sato, Hisaaki: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.

Sato, Hisato; and Takatsu, Haruyoshi, to Dainippon Ink & Chemicals, Inc. Nematic liquid crystalline compounds. 4,207,252, Cl. 260-455.00R.

Sato, Masamichi, to Fuji Photo Film Co., Ltd. Plasma-etching image in exposed AgX emulsion. 4,207,105, Cl. 430-432.000.

Sato, Yasushi; and Onaka, Hidemi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation for an internal combustion engine. 4,206,731, Cl. 123-119.00A.

Sato, Yo, to Kabushiki Kaisha Sato. Constant pressure printing mechanism for hand labeler. 4,206,702, Cl. 101-291.000.

Sato, Yo, to Kabushiki Kaisha Sato. Constant printing pressure mechanism for portable label printing machine, or the like. 4,206,703, Cl. 101-291.000.

Sato, Yo, to Kabushiki Kaisha Sato Kenkyusho. Constant pressure printing mechanism for portable label printing machine or the like. 4,206,704, Cl. 101-291.000.

Satoh, Shin: *See*—
Suganuma, Tsuneo; Toda, Gyozo; Ishida, Koji; Satoh, Shin; Katsuyama, Toshio; and Sugie, Mamoru, 4,206,968, Cl. 350-96.330.

Satzler, Ronald L., to Caterpillar Tractor Co. Curing mold for curing replaceable tread and track belts. 4,207,052, Cl. 425-394.000.

Savino, Dominick J. Staple and anviless stapling apparatus therefor. 4,206,863, Cl. 227-83.000.

Sawai, Akira, to Nippon Electric Co., Ltd.; and Nippon Electric Co., Ltd. Timing-phase control system for duobinary transmission. 4,207,528, Cl. 375-20.000.

Saxon, Bruce R., to International Telephone and Telegraph Corporation. Line/interface circuit for key telephone systems. 4,207,439, Cl. 179-99.0LC.

Scaramucci, Domer. Butterfly valve with cam actuable seat. 4,206,903, Cl. 251-174.000.

Scardera, Michael; and Grosser, Frank R., to Olin Corporation. Biodegradable, alkali stable, non-ionic surfactants. 4,207,421, Cl. 568-625.000.

Schachter, Herbert I.: *See*—
Lobel, Stanley; Lobel, Leon; and Schachter, Herbert I., 4,206,856, Cl. 222-564.000.

Schad, Robert D.: *See*—
Wright, John B.; and Schad, Robert D., 4,207,051, Cl. 425-556.000.

Schafer, Heinz: *See*—
Scheler, Siegfried; and Schafer, Heinz, 4,207,110, Cl. 430-173.000.

Schafer, Werner: *See*—
Fock, Jurgen; Schamberg, Eckehard; and Schafer, Werner, 4,207,379, Cl. 428-480.000.

Schamberg, Eckehard: *See*—
Fock, Jurgen; Schamberg, Eckehard; and Schafer, Werner, 4,207,379, Cl. 428-480.000.

Scheidegger, Hans: *See*—
Kaiser, Leo E.; Scheidegger, Hans; and Haase, Jaroslav, 4,207,184, Cl. 210-37.00R.

Scheler, Siegfried; and Schafer, Heinz, to Hoechst Aktiengesellschaft. Diazotype material. 4,207,110, Cl. 430-173.000.

Schering Aktiengesellschaft: *See*—
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.

Schering Corporation: *See*—
Nafissi-Varchei, Mohammed M., 4,207,333, Cl. 424-300.000.

Schiffer, Gunter, to Kleinewefers GmbH. Apparatus for continuous full-width washing of a textile cloth layer. 4,206,618, Cl. 68-3.0SS.

Schiffman, Murray M., to VSC Company, The. Dictation recorder with speech-extendable adjustment predetermined playback time. 4,207,440, Cl. 179-100.1VC.

Schindler, Harvey D. Dehydrochlorination of 1,2-dichloroethane. 4,207,267, Cl. 260-656.00R.

Schindler, Harvey D.: *See*—
Sze, Morgan C.; Riegel, Herbert; and Schindler, Harvey D., 4,207,268, Cl. 260-659.00R.

Schinkitz, Dieter: *See*—
Hartmann, Achim; Kulling, Achim; Schinkitz, Dieter; and Klein, Edgar, 4,207,201, Cl. 252-191.000.

Schlaeger, Albert J.: *See*—
Boehme, Werner R.; and Schlaeger, Albert J., 4,207,115, Cl. 106-95.000.

Schloemann-Siemag Aktiengesellschaft: *See*—
Groos, Horst H.; Richardt, Urban; and Hoffmeier, Siegfried, 4,206,626, Cl. 72-265.000.

Schmidt, Thomas W.: *See*—
Favre, John A.; and Schmidt, Thomas W., 4,207,465, Cl. 250-288.000.

Schmitt, Frederick L.: *See*—
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,207,214, Cl. 252-522.00R.

Schmoegner, John C.: *See*—
Runnells, Robert R.; Schmoegner, John C.; Larsen, Roland G.; and De La Mare, Robert A., 4,206,546, Cl. 433-79.000.

Schneider, Abraham: *See*—
Suld, George; Schneider, Abraham; and Myers, Harry K., Jr., 4,207,080, Cl. 585-22.000.

Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., to Armstrong Cork Company. Decorative multi-level embossed surface covering. 4,207,368, Cl. 428-172.000.

Schneider, Felix: *See*—
Kramer, Rolf; Schneider, Felix; and Kampmann, Gerhard, 4,206,571, Cl. 49-340.000.

Schneider GmbH & Co.: *See*—
Schuster, Peter; and von Chiari, Bernd, 4,207,114, Cl. 106-40.00R.

Schneider, John F., to Minnesota Mining and Manufacturing Company. Intermittent compression device. 4,206,751, Cl. 128-24.00R.

Schnettler, Frank J.: *See*—
Gyorgy, Ernst M.; and Schnettler, Frank J., 4,207,613, Cl. 365-27.000.

Scholl, Richard A.; and Cole, John L., to Varian Associates, Inc. Circumferential error signal apparatus for crystal rod pulling. 4,207,293, Cl. 422-249.000.

Scholtes, Edward L.; and Van Cleave, Herbert N. Heated air circulator. 4,206,804, Cl. 165-40.000.

Schon, Franz: *See*—
Petersohn, Gerhard; von der Eltz, Hans-Ulrich; Birke, Walter; and Schon, Franz, 4,207,058, Cl. 432-59.000.

Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, to Schering Aktiengesellschaft. Novel 17-substituted 11 β-hydroxy steroids of the pregnane series, their manufacture, preparation and use. 4,207,316, Cl. 424-243.000.

Schrag, Rolf, to Dr. Ing. h.c.F. Porsche Aktiengesellschaft. Casing for the lubrication of the camshaft of an internal combustion engine for automotive vehicles. 4,206,739, Cl. 123-196.00R.

Schrecongost, Ray B.: *See*—
Bagus, Brian M.; and Schrecongost, Ray B., 4,206,674, Cl. 84-1.010.

Schrott, Robert: *See*—
Diener, Arnulf; Meininghaus, Fritz; Oehmen, Gunter; and Schrott, Robert, 4,207,094, Cl. 75-60.000.

Schuetz, Hans-Jurgen: *See*—
Muller, Werner; Eigel, Antonin; Schuetz, Hans-Jurgen; and Bunemann, Hans, 4,207,200, Cl. 252-184.000.

Schuierer, Manfred, to Bruckner Apparatebau GmbH. Processes for removing impurities from textile materials. 4,207,072, Cl. 8-137.000.

Schulde, Felix; and Kulisch, Volker, to Chemische Werke Huls Aktiengesellschaft. Paper sizing agents. 4,207,223, Cl. 260-29.6WB.

Schuller, James J., to Pullman Incorporated. Hopper car door latching arrangment. 4,207,020, Cl. 414-378.000.

Schulmeyer, Norbert: *See*—
von Bebenburg, Walter; Schulmeyer, Norbert; and Jakovlev, Vladimir, 4,207,322, Cl. 424-256.000.

Schulze, Ehrhart, to Stiegler, Karl Heinz. Welding machine for thermoplastic web. 4,207,136, Cl. 156-515.000.

Schurfeld, Horst; Peters, Wolfgang; and Ortlieb, Robert M., to DeVlieg Machine Company. Presettable tool supporting device. 4,206,665, Cl. 82-36.00R.

Schurig, Helmut: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,207,165, Cl. 204-258.000.

Schuster, Peter; and von Chiari, Bernd, to Schneider GmbH & Co. Foamed ceramic element and process for making same. 4,207,114, Cl. 106-40.00R.

Schutten, Herman P.: *See*—
Spellman, Gordon B.; Jaskolski, Stanley V.; Schutten, Herman P.; and Lade, Robert W., 4,206,646, Cl. 73-362.0SC.

Schwarzkopf, Werner: *See*—
Gelhaar, Rolf; and Schwarzkopf, Werner, 4,207,083, Cl. 55-129.000.

Sciffer, Jack P.: *See*—
Porter, Maxwell R.; Sciffer, Jack P.; Adamiak, Zigmunt P.; and Dim, Alexander, 4,207,362, Cl. 427-367.000.

Scott Paper Company: *See*—
Baker, John H., Jr., 4,207,367, Cl. 428-171.000.

Scovill Manufacturing Company: *See*—
Fisher, Harry; and Fisher, Stuart, 4,206,669, Cl. 83-212.100.

Sebring, Robert E.: *See*—
Coplan, Myron J.; Burchesky, Robert D.; and Sebring, Robert E., 4,207,192, Cl. 210-321.00R.

Secrist, Walter S., to United States Steel Corporation. Subsurface pumping installation for handling viscous or sand-laden fluids. 4,207,036, Cl. 417-431.000.

Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Long stroke ejector for a revolver. 4,206,560, Cl. 42-68.000.

Segal, Leon, to Allied Chemical Corporation. Highly filled polyolefin compositions. 4,207,373, Cl. 428-251.000.

Sekiya, Setsuro: *See*—
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.

Semple, Joseph W., to NEGEA Energy Products, Inc. Heating. 4,206,874, Cl. 237-8.00C.

Setsuta, Tatsuo: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.

Setzer, Eberhart: *See*—
Graafmann, Jurgen; and Setzer, Eberhart, 4,206,785, Cl. 138-149.000.

Seuter, Friedel: *See*—
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.

Seveso, Cesare: *See*—
Beretta, Germano; Seveso, Cesare; and Tuci, Giulio, 4,207,427, Cl. 174-26.00R.

Seybold, Guenther; and Eilingsfeld, Heinz, to BASF Aktiengesellschaft. Azo dyes containing a thiazole component. 4,207,233, Cl. 260-158.000.

Seymour, Eric W. Power presses and components for such presses. 4,207,048, Cl. 425-151.000.

Seymour, George W. Process for controlling pulp washing systems. 4,207,141, Cl. 162-49.000.

Shade, Russell L., Jr.: *See*—
Reed, William G.; Mazer, Jack S.; and Shade, Russell L., Jr., 4,206,802, Cl. 165-1.000.

Shapiro, Harry G., to York Luggage Corporation. Luggage. 4,206,835, Cl. 190-60.000.

Sharp Kabushiki Kaisha: *See*—
Miyamae, Ryuichi, 4,206,655, Cl. 73-708.000.
Yamamoto, Keizo; and Austin, Charles C., 4,207,479, Cl. 307-308.000.
Yamamoto, Yoichi, 4,207,582, Cl. 346-140.00R.
Yasuda, Shuhei; Ohba, Toshihiro; Suzuki, Chugi; Koba, Masayoshi; and Kudo, Jun, 4,207,617, Cl. 365-111.000.

Sharpe, James R.; and Free, Dustin L., to Dow Chemical Company, The. Chemical wash with fluid loss control. 4,207,194, Cl. 252-8.55B.

Shaw, Anthony R.: *See*—
Goodman, Ronald D.; Krueger, Wallace F.; and Shaw, Anthony R., 4,206,748, Cl. 126-444.000.

Shaw, Robert F. Surgical instrument having self-regulated vapor condensation heating of its cutting edge and method of using the same. 4,206,759, Cl. 128-303.100.

Shaw, Stuart W., to International Nickel Co., Inc., The. Nickel-base superalloys. 4,207,098, Cl. 75-171.000.

Sheaffer, John A., to Dorr-Oliver Incorporated. Rotary vacuum disc filter. 4,207,190, Cl. 210-232.000.

Sheffer Collet Company: *See*—
Felker, Merle, 4,206,932, Cl. 279-1.00D.

Sheldon, Victor L., Jr.: *See*—
Jenkel, Howard D.; and Sheldon, Victor L., Jr., 4,206,725, Cl. 123-32.00R.

Shell Oil Company: *See*—
Kilty, Peter A., 4,207,210, Cl. 252-463.000.

Shen, Peter I., to United States of America, Air Force. Multiple shock aerodynamic window. 4,207,542, Cl. 331-94.50G.

Shepard, Francis H., Jr.: *See*—
Grier, William R.; Shepard, Francis H., Jr.; and Arledge, Arthur L., 4,207,612, Cl. 364-900.000.

Shepherd, David, to Tenneco Chemicals, Inc. Paper sizing agents. 4,207,142, Cl. 162-158.000.

Sheppard, Thomas H.; and Paddison, Richard L., to General Motors Corporation. Motor vehicle roll control system. 4,206,935, Cl. 280-723.000.

Sherrill, William M.: *See*—
Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., 4,207,572, Cl. 343-113.00R.

Sherry, Howard S.: *See*—
Butter, Stephen A.; Hanson, Francis V.; and Sherry, Howard S., 4,207,248, Cl. 260-449.60R.
Butter, Stephen A.; and Sherry, Howard S., 4,207,250, Cl. 260-449.60R.

Sherwin-Williams Company, The: *See*—
Kindrick, Robert H., 4,207,377, Cl. 428-404.000.

Sherwood Medical Industries Inc.: *See*—
Gindler, E. Melvin, 4,207,203, Cl. 252-408.000.

Shiao, Daniel D.; and Morrow, Lawrence R., to Eastman Kodak Company. Heat developable and stabilizable photographic materials and process. 4,207,392, Cl. 430-352.000.

Shigeoka, Ritsuo: *See*—
Haga, Hiroshi; Shigeoka, Ritsuo; and Yamauchi, Takafumi, 4,207,354, Cl. 426-574.000.

Shiio, Tsuyoshi: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.

Shimai, Hideo, to Yoshida Kogyo K.K. Apparatus for removing coupling element residuals. 4,206,544, Cl. 29-770.000.

Shimizu, Shozaburo. Process for scrub brush manufacture. 4,206,948, Cl. 300-21.000.

Shimoishi, Tetsuo, to Teibow Company Limited. Writing instrument. 4,207,013, Cl. 401-265.000.

Shimoji, Katsuichi: *See*—
Hayashi, Masaki; Arai, Yoshinobu; Shimoji, Katsuichi; Konishi, Yoshitaka; Ohuchida, Shuichi; and Hashimoto, Shinsuke, 4,207,332, Cl. 424-285.000.

Shiokawa, Youichi: *See*—
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.

Shirasu, Tadao: *See*—
Inoue, Shigeru; Shirasu, Tadao; and Miyagawa, Hisashi, 4,207,256, Cl. 260-555.00A.

Shockley, Norman E. Air conditioner control system. 4,206,613, Cl. 62-133.000.

Shores, Marvin W., to General Dynamics Corportation. Electromagnetic hazard suppression techniques. 4,206,707, Cl. 102-46.000.

Shue, John I., Jr.; and Douty, George H., to AMP Incorporated. Data/-logic connector. 4,206,962, Cl. 339-147.00R.

Shue, Robert S., to Phillips Petroleum Company. Copolyamide of branched C_{10} diamine, bis(4-aminocyclohexyl)-alkane, isophthalic acid and terephthalic acid. 4,207,411, Cl. 528-338.000.

Shultz, Ralph H., Jr.: *See*—
Reynolds, Clifton J.; and Shultz, Ralph H., Jr., 4,207,025, Cl. 415-200.000.

Siegel, Hardo: *See*—
Linhart, Friedrich; Girgensohn, Bjoern; Merkle, Hans; Siegel, Hardo; and Mueller, Hans-Richard, 4,207,243, Cl. 260-347.500.

Siegien, Miguel. Two-stroke-cycle engine having an auxiliary piston and valve arrangement, and its associated drive mechanism. 4,206,727, Cl. 123-66.000.

Siegmund, Gustav J., to Ford Motor Company. Throttle linkage. 4,207,273, Cl. 261-23.00A.

Siemens Aktiengesellschaft: *See*—
Hahn, Alfred; Gall, Arthur; and Jager, Wolfgang, 4,206,989, Cl. 354-182.000.

Signode Corporation: *See*—
Klaus, Arthur; and Tacke, Horst, 4,206,687, Cl. 91-395.000.

Silver, Alexander, to Garrett Corporation, The. Magnetic coupling. 4,207,485, Cl. 310-104.000.

Silverberg, Morton; and Hamaker, Ralph A., to Xerox Corporation. Belt tensioning system. 4,206,994, Cl. 355-3.0BE.

Silzars, Aris: *See*—
Tomison, William H.; Janko, Bozidar; Bostwick, Myron A., Jr.; and Silzars, Aris, 4,207,492, Cl. 315-3.000.

Simeau, Bernard J., to Constructions Electriques, R.V. D.C. Amplifier with improved characteristics with respect to temperature. 4,207,480, Cl. 307-308.000.

Simi, Edward A.: *See*—
Watson, Gary E.; Simi, Edward A.; and Miller, Richard R., 4,206,602, Cl. 60-433.000.

Simone, Andre A., to Lummus Company, The. Treatment of pyrolysis fuel oil. 4,207,168, Cl. 208-86.000.

Simonsson, Leif R.: *See*—
Claeson, Karl G.; Aurell, Leif E.; and Simonsson, Leif R., 4,207,232, Cl. 435-23.000.

Sinchuk, Anatoly G.: *See*—
Safonnikov, Anatoly N.; Sinchuk, Anatoly G.; and Antonov, Anatoly V., 4,207,454, Cl. 219-73.100.

Singer Company, The: *See*—
Dotsko, Martin, 4,206,574, Cl. 51-363.000.
Pitchford, Richard L., 4,206,985, Cl. 353-68.000.

Sir Howard Grubb Parsons and Company Ltd.: *See*—
Hopkins, Joseph; and McKenna, David, 4,207,469, Cl. 250-343.000.

Sittig, Roland: *See*—
De Bruyne, Patrick; and Sittig, Roland, 4,207,584, Cl. 357-38.000.

SKF Kugellagerfabriken GmbH: *See*—
Ernst, Horst; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,206,951, Cl. 308-6.00C.
Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Walter, Lothar, 4,206,952, Cl. 308-8.200.

Skjelby, Finn, to Ex-Cell-O Corporation. Container and blank for constructing same. 4,206,867, Cl. 229-17.00G.

Sliger, Boyd P., to Robertshaw Controls Company. Method of making a thermostat construction with an annular sealing member. 4,206,873, Cl. 236-34.500.

Smallegan, Jon M., to Novo Products, Inc. Lamp control circuit using heater/thermistor time delay. 4,207,501, Cl. 315-159.000.

Smelser, Gene C.: *See*—
Jenkins, Harry L.; Smelser, Gene C.; and Alford, David W., 4,207,254, Cl. 260-508.000.

Smethers, John D.: *See*—
Cox, Lawrence A.; and Smethers, John D., 4,206,754, Cl. 128-204.210.

Smirnov, Oleg P.: *See*—
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S., 4,207,007, Cl. 366-275.000.

Smith, Eugene L., Jr.: *See*—
Wang, Samuel S.; and Smith, Eugene L., Jr., 4,207,178, Cl. 209-166.000.

Smith, Harry: *See*—
Buckle, Derek R.; and Smith, Harry, 4,207,335, Cl. 424-304.000.

Smith, Herman W., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-3,7-inter-m-phenylene-13,14-didehydro-PGA, PGD, and PGE compounds. 4,207,422, Cl. 568-807.000.

Smith, Jay C., to Freeport Minerals Company. Method of treating phosphoric acid to prevent crud formation during solvent extraction. 4,207,302, Cl. 423-321.00S.

Smith, John I. Electronic photometer. 4,207,533, Cl. 328-145.000.

Smith, Robert; and Heighton, Douglas C., to White Consolidated Industries, Inc. Self-adjusting spring retainer. 4,206,897, Cl. 248-505.000.

Smith, Willis A. Cutting tool jig with cutter guard. 4,206,672, Cl. 83-415.000.

Snyder, Harlan C.: *See*—
Luiz, Fernando A.; Snyder, Harlan C.; and Sorg, John H., Jr., 4,207,609, Cl. 364-200.000.

Snyder, Warren L., to Minnesota Mining and Manufacturing Company. Photographic contrast enhancers. 4,207,393, Cl. 430-546.000.

Sobajima, Shigenobu; Chiba, Kiyoshi; Itoh, Kunio; Yonemura, Utami; and Mitani, Yuji, to Teijin Limited. Insulative multi-pane window structure of refrigerator or freezer. 4,206,615, Cl. 62-248.000.

Sobole, Pierre, to Societe Bourguignonne de Mecanique. Safety ignition valves. 4,207,054, Cl. 431-69.000.

Societa Italiana Telecomunicazioni Siemens S.p.A.: *See*—
De Marco, Franco; and Biraghi, Giorgio, 4,207,438, Cl. 179-18.00G.

S.A. Automobiles Citroen: *See*—
Delehonte, Jack F., 4,206,572, Cl. 51-34.00H.

Societe Bourguignonne de Mecanique: *See*—
Sobole, Pierre, 4,207,054, Cl. 431-69.000.

Societe Dites Automobiles Peugeot: *See*—
Delehonte, Jack F., 4,206,572, Cl. 51-34.00H.

Societe Europeene des Produits Refractories: *See*—
Moriez, Marcel; and Delobel, Jacques, 4,206,577, Cl. 52-405.000.

Societe Nationale des Poudres et Explosifs: *See*—
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., 4,207,008, Cl. 366-309.000.

Societe Nationale Industrielle Aerospatiale: *See*—
Gouley, Claude A., 4,207,570, Cl. 343-106.00R.

Soder, Alfons: *See*—
Furrer, Harald; Soder, Alfons; Komarek, Jaromir; Hinze, Heinz-Joachim; and Munch, Gerhard, 4,207,321, Cl. 424-253.000.

Sohma, Hiroshi; and Tanno, Toshihiro, to Pioneer Electronic Corporation. Vehicle speaker system provided with a passive radiator. 4,206,830, Cl. 181-141.000.

Son, Pyong N.: *See*—
Lai, John T.; and Son, Pyong N., 4,207,228, Cl. 260-45.80N.

Sone, Koki: *See*—
Kimura, Shinji; Takao, Hiroshi; Ishitani, Shigeo; Ikezawa, Kenji; and Sone, Koki, 4,207,159, Cl. 204-195.00S.

Sony Corporation: *See*—
Kawasaki, Tsuneo, 4,207,589, Cl. 358-28.000.
Ozaki, Yoshio; and Ohta, Shuichi, 4,206,981, Cl. 352-14.000.

Sorg, John H., Jr.: *See*—
Luiz, Fernando A.; Snyder, Harlan C.; and Sorg, John H., Jr., 4,207,609, Cl. 364-200.000.

Soupal, Thomas R., to Midland-Ross Corporation. Gas charged accumulator with failure indicator. 4,207,563, Cl. 340-626.000.

Southwest Research Institute: *See*—
Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., 4,207,572, Cl. 343-113.00R.

Spaulding, David C.: *See*—
Masler, William F., III; and Spaulding, David C., 4,207,405, Cl. 525-328.000.

Speas, Charles A., to Hedwin Corporation. Method of making plastic drum assemblies with preformed inserts. 4,207,284, Cl. 264-516.000.

Spellman, Gordon B.; Jaskolski, Stanley V.; Schutten, Herman P.; and Lade, Robert W., to Eaton Corporation. Transducer combining comparator or converter function with sensor function. 4,206,646, Cl. 73-362.0SC.

Spence, John H., to Pullman Incorporated. Railway car center plate filler arrangement. 4,206,710, Cl. 105-420.000.

Spenney, Jerry G., to United States of America, Veterans Affairs. Process for purifying iodinated bile acid conjugates. 4,207,308, Cl. 424-1.000.

Sperry Rand Corporation: *See*—
Freimuth, John H.; Clevenger, James T., Jr.; Campbell, Willis R.; and Diederich, Anthony F., Jr., 4,206,587, Cl. 56-341.000.

Spicer, Margaret B.: *See*—
Sabo, Paul F.; and Spicer, Margaret B., 4,206,556, Cl. 34-90.000.

Spira, Joel S.; Capewell, Dennis; and Luchaco, David G., to Lutron Electronics Co., Inc. System for energizing and dimming gas discharge lamps. 4,207,498, Cl. 315-97.000.

Spira, Joel S.: *See*—
Capewell, Dennis; Luchaco, David G.; and Spira, Joel S., 4,207,497, Cl. 315-96.000.

Spivack, John D., to Ciba-Geigy Corporation. Hindered phenyl phosphites. 4,207,229, Cl. 260-45.8NT.

Spofford, Walter R., Jr.: *See*—
Pomerantz, Daniel I.; Spofford, Walter R., Jr.; and Goldstein, Sanders, 4,206,552, Cl. 34-23.000.

Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, to International Flavors & Fragrances Inc. 2-Oxabicyclooctane derivatives in perfume compositions. 4,207,214, Cl. 252-522.00R.

Sprenkle, William E., Jr., to Monsanto Company. Foamable polymeric alloy composition. 4,207,402, Cl. 521-139.000.

SRI International: *See*—
Woodbury, James R., 4,207,510, Cl. 318-802.000.

Srivastava, Gopal, to Zenith Radio Corporation. Color killer. 4,207,588, Cl. 358-26.000.

Staab, Robert A.: *See*—
Davis, Jerry E.; Mueller, Frank J.; Novosel, Gerald W.; and Staab, Robert A., 4,207,197, Cl. 252-99.000.

Stacy, Richard D.: *See*—
Howarth, George B.; and Stacy, Richard D., 4,207,235, Cl. 260-239.55R.

Stampfer, Michael: *See*—
Haake, Hinrich; Stampfer, Michael; Meier, Hubert; Franke, Reimar; Dalmer, Hans-Jurgen; Ott, Ernst; and Kienle, Josef, 4,206,581, Cl. 56-14.600.

Standard Oil Company (Indiana): *See*—
Balint, Nikolaous K., 4,207,206, Cl. 252-429.00B.

Stanfield, Charles E. Pronged vibrator. 4,207,005, Cl. 366-108.000.

Stansky, Charles A., Jr., to UOP Inc. Sweetening of hydrocarbon distillates utilizing a tetra-alkyl guanidine with phthalocyanine catalyst. 4,207,173, Cl. 208-207.000.
Stanton, Graham B., to Mauri Brother & Thomson (N.Z.) Limited. Food processing apparatus. 4,206,880, Cl. 241-98.000.
Stanton, James L., Jr.; and Kipple, William H., to General Signal Corporation. Mixing apparatus. 4,207,275, Cl. 261-93.000.
Stanuszek, Dennis M.: *See*—
Isakson, Larry E.; and Stanuszek, Dennis M., 4,207,564, Cl. 340-626.000.
Isakson, Larry E.; Stanuszek, Dennis M.; and Fritsche, William E., 4,207,565, Cl. 340-626.000.
Star-Kist Foods, Inc.: *See*—
Brewer, Andrew I., 4,206,718, Cl. 119-1.000.
Stauffer Chemical Company: *See*—
Honig, Milton L.; and Weil, Edward D., 4,207,271, Cl. 260-953.000.
Pallos, Ferenc M., 4,207,334, Cl. 424-300.000.
Stave, Frederick R., to RCA Corporation. Video disc player having record size identification apparatus. 4,206,926, Cl. 274-9.00B.
Steel, Margaret L.: *See*—
Cowen, Geoffrey; Norton-Berry, Philip; and Steel, Margaret L., 4,207,278, Cl. 264-46.400.
Steelcase Inc.: *See*—
Walz, Fredrick J., 4,206,576, Cl. 52-291.000.
Steele, Daniel, to Imperial Chemical Industries Limited. Joining lengths of detonating fuse-cord. 4,206,706, Cl. 102-27.00R.
Steensma, Peter D., to International Telephone and Telegraph Corporation. Intruder alarm arrangement for an optical communication system. 4,207,561, Cl. 340-600.000.
Stefanski, Anthony T.: *See*—
Carson, John R.; Carmosin, Richard J.; and Stefanski, Anthony T., 4,207,237, Cl. 260-326.200.
Steiner, Peter: *See*—
Bischoff, William F.; and Steiner, Peter, 4,207,292, Cl. 422-232.000.
Stephens, George B. D. Box tray. 4,206,868, Cl. 229-33.000.
Sterling Drug Inc.: *See*—
Bailey, Denis M., 4,207,418, Cl. 546-123.000.
Jarcho, Michael, 4,207,306, Cl. 423-633.000.
Stevenson, John S.: *See*—
Mason, David R.; Blair, Alan; and Stevenson, John S., 4,207,149, Cl. 204-46.00G.
Stichting voor Fundamenteel Onderzoek der Materie: *See*—
Ernst, Gerardus J., 4,207,540, Cl. 331-94.5PE.
Stiegler, Karl Heinz: *See*—
Schulze, Ehrhart, 4,207,136, Cl. 156-515.000.
Stoll, Joseph M.: *See*—
Hatters, Harry D.; and Stoll, Joseph M., 4,207,145, Cl. 201-41.000.
Storm, Roger S., to Carborundum Company, The. Ceramic composition suited to be injection molded and sintered. 4,207,226, Cl. 260-38.000.
Stotz, Wolf-Gunter; and Kiesel, Karl, to Escher Wyss Limited. Rolling device. 4,206,700, Cl. 100-162.00B.
Stowell, Ronald: *See*—
Molzahn, Herbert W.; and Stowell, Ronald, 4,206,582, Cl. 56-15.800.
Strandly, Ingvald, to Nordiskafilt AB. Method of providing a seam in double-layer forming fabrics. 4,206,787, Cl. 139-383.00A.
Strasser, Bernd: *See*—
Mose, Luciano; Schurig, Helmut; and Strasser, Bernd, 4,207,165, Cl. 204-258.000.
Strikis, Guntis V., to Ford Motor Company. Power steering pump. 4,207,038, Cl. 418-75.000.
Sturm, Ruger & Co., Inc.: *See*—
Sefried, Harry H., II, 4,206,560, Cl. 42-68.000.
Su, Cyril K. M.; and Verwaerde, Michel, to Institut Francais du Petrole. Gas turbine. 4,206,593, Cl. 60-39.040.
Sudekum, John H., to B. F. Goodrich Company, The. Stabilized compositions of polymers in oil. 4,207,196, Cl. 252-47.500.
Sugai, Shinzo: *See*—
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,207,381, Cl. 428-619.000.
Suganuma, Tsuneo; Toda, Gyozo; Ishida, Koji; Satoh, Shin; Katsuyama, Toshio; and Sugie, Mamoru, to Hitachi, Ltd. Optical fiber and method for producing the same. 4,206,968, Cl. 350-96.330.
Suganuma, Tsuneo: *See*—
Onoda, Seiichi; Kawakami, Shojiro; Nishida, Shigeo; Tanaka, Toshiki P.; Suganuma, Tsuneo; and Sumi, Masao, 4,206,967, Cl. 350-96.330.
Sugie, Mamoru: *See*—
Suganuma, Tsuneo; Toda, Gyozo; Ishida, Koji; Satoh, Shin; Katsuyama, Toshio; and Sugie, Mamoru, 4,206,968, Cl. 350-96.330.
Sugimoto, Isao: *See*—
Fukuroi, Akio; Hayashi, Masanobu; Yamashita, Hiroshi; and Sugimoto, Isao, 4,206,619, Cl. 68-20.000.
Sugita, Yasunori; and Miyara, Yokichi, to Mitsui Toatsu Chemicals, Incorporated. Apparatus for molding hollow objects of thermoplastic resins. 4,207,063, Cl. 432-124.000.
Sugiyama, Yoshi; and Kataoka, Keisuke, to Nippon Telegraph and Telephone Public Corporation. Programmable logic array arrangement. 4,207,556, Cl. 340-166.00R.
Suld, George; Schneider, Abraham; and Myers, Harry K., Jr., to Suntech, Inc. Dimerization of norbornadiene to exo-exo hexacyclic dimer. 4,207,080, Cl. 585-22.000.
Sullivan, James P.: *See*—
Wiese, Klaus H.; and Sullivan, James P., 4,206,848, Cl. 212-4.000.
Sumi, Masao: *See*—
Onoda, Seiichi; Kawakami, Shojiro; Nishida, Shigeo; Tanaka, Toshiki P.; Suganuma, Tsuneo; and Sumi, Masao, 4,206,967, Cl. 350-96.330.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Internal combustion engine. 4,206,599, Cl. 60-285.000.
Sumner, Charles A.: *See*—
Gonzalez, Ricardo; Sumner, Charles A.; and Sanctuary, Robert E., 4,206,686, Cl. 91-386.000.
Sun Chemical Corporation: *See*—
Horwitt, Laurence G.; and Mattis, Donald J., 4,207,455, Cl. 219-265.000.
Sundstrand Corporation: *See*—
Falck, Peter L.; and Hamlin, Edmund M., Jr., 4,207,505, Cl. 318-595.000.
Sunouchi, Akio; Tokuda, Ryuji; Uchidoi, Masanori; Kumazawa, Kenichi; and Iwashita, Tomonori, to Canon Kabushiki Kaisha. Exposure adjusting device for camera system. 4,206,987, Cl. 354-44.000.
Suntech, Inc.: *See*—
Suld, George; Schneider, Abraham; and Myers, Harry K., Jr., 4,207,080, Cl. 585-22.000.
Susaki, Akihiro; Tsuboki, Noboru; Amino, Kyoichi; and Hosoya, Minoru, to Kao Soap Co., Ltd. Method for controlling filling rate in filling machine. 4,206,788, Cl. 141-1.000.
Suttkus, David J.: *See*—
Drutchas, Gilbert H.; Cass, Richard; and Suttkus, David J., 4,207,033, Cl. 417-251.000.
Sutton, Richard C.: *See*—
Campbell, Gerald A.; Hollister, Kenneth R.; and Sutton, Richard C., 4,207,109, Cl. 430-536.000.
Suwa, Masateru; and Komuro, Katsuhiro, to Hitachi, Ltd. Method of producing graphite-containing copper alloys. 4,207,096, Cl. 75-153.000.
Suzuki, Chugi: *See*—
Yasuda, Shuhei; Ohba, Toshihiro; Suzuki, Chugi; Koba, Masayoshi; and Kudo, Jun, 4,207,617, Cl. 365-111.000.
Suzuki, Haruyuki: *See*—
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Suzuki, Hidenori: *See*—
Nakatani, Keiji; and Suzuki, Hidenori, 4,207,473, Cl. 250-570.000.
Suzuki, Hirosuke. Liquid detecting device. 4,206,632, Cl. 73-40.50R.
Suzuki, Kazuie, to Hokushin Electric Works, Ltd. Magnetic flowmeter. 4,206,640, Cl. 73-194.0EM.
Suzuki, Nobuyoshi, to Olympus Optical Co., Ltd. Liquid sample distributor. 4,207,074, Cl. 23-230.00R.
Sweeney, William M.; and Dille, Kenneth L., to Texaco Inc. Diesel fuel containing manganese tricarbonyl and oxygenated compounds. 4,207,078, Cl. 44-68.000.
Sweeney, William M.: *See*—
Bove, Francis S.; Sweeney, William M.; and Herbstman, Sheldon, 4,207,077, Cl. 44-56.000.
Swidler, Ronald: *See*—
D'Atri, John J.; Swidler, Ronald; Colwell, Judith J.; and Parks, Thomas R., 4,207,347, Cl. 426-92.000.
Swinton, Spencer S., to Educational Testing Service. Teaching system employing binary light-sensitive responders. 4,206,557, Cl. 35-9.00B.
Sylla, Klaus F.: *See*—
Kurzhals, Hans-Albert; and Sylla, Klaus F., 4,207,352, Cl. 426-428.000.
Syntex Corporation: *See*—
Fried, John H.; and Harrison, Ian T., 4,207,241, Cl. 260-345.70R.
Syntex (U.S.A.) Inc.: *See*—
Howarth, George B.; and Stacy, Richard D., 4,207,235, Cl. 260-239.55R.
Szarek, Walter A.; and Jones, John K. N., deceased (by Jones, Marjorie I., executrix), to Queen's University at Kingston. L-Sucrose and process for producing same. 4,207,413, Cl. 536-1.000.
Sze, Morgan C.; Riegel, Herbert; and Schindler, Harvey D., to Lummus Company, The. Oxychlorination of methane. 4,207,268, Cl. 260-659.00R.
Tacke, Horst: *See*—
Klaus, Arthur; and Tacke, Horst, 4,206,687, Cl. 91-395.000.
Tadanier, John S.: *See*—
Carney, Ronald E.; Martin, Jerry R.; McAlpine, James B.; and Tadanier, John S., 4,207,415, Cl. 536-17.00R.
Tadewald, Thomas D., to UOP Inc. Manufacture of conductive or semi-conductive elements by means of a continuous pultrusion process. 4,207,129, Cl. 156-242.000.
Tadmor, Zehev: *See*—
Hold, Peter; and Tadmor, Zehev, 4,207,004, Cl. 366-97.000.
Tagawa, Kenkichi: *See*—
Tsuda, Shinichi; Nakajo, Yoshio; Tagawa, Kenkichi; Hirai, Hayami; and Takagi, Shunji, 4,207,057, Cl. 432-59.000.
Takada, Keisuke, to Tokyo Shibaura Electric Co., Ltd. Electromagnetic flow meter. 4,206,641, Cl. 73-194.0EM.
Takada, Masami, to Nippon Electric Co., Ltd. System using carrier burst sequences for detecting interference signals occurring across channels of a radio link including a repeater. 4,207,521, Cl. 455-20.000.
Takagi, Shunji: *See*—
Tsuda, Shinichi; Nakajo, Yoshio; Tagawa, Kenkichi; Hirai, Hayami; and Takagi, Shunji, 4,207,057, Cl. 432-59.000.

Takami, Yasushi, to Myojo Foods Co., Ltd. Disposable plastic upper lid. 4,206,854, Cl. 222-478.000.
Takao, Hiroshi: *See—*
Kimura, Shinji; Takao, Hiroshi; Ishitani, Shigeo; Ikezawa, Kenji; and Sone, Koki, 4,207,159, Cl. 204-195.00S.
Takara Co., Ltd.: *See—*
Ogawa, Iwakichi, 4,206,564, Cl. 46-22.000.
Takasugi, Hisashi: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.
Takatsu, Haruyoshi: *See—*
Sato, Hisato; and Takatsu, Haruyoshi, 4,207,252, Cl. 260-455.00R.
Takaya, Takao: *See—*
Kamiya, Takashi; Saito, Yoshihisa; Hashimoto, Masashi; Nakaguti, Osamu; Oku, Teruo; Shiokawa, Youichi; Takaya, Takao; Komori, Tadaaki; Teraji, Tsutomu; Hemmi, Keiji; and Takasugi, Hisashi, 4,207,234, Cl. 260-239.00A.
Takeda Chemical Industries, Ltd.: *See—*
Matsumura, Koichi; Hashimoto, Naoto; and Furukawa, Yoshiyasu, 4,207,324, Cl. 424-273.00R.
Takeuchi, Masato: *See—*
Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, 4,207,209, Cl. 252-462.000.
Takeuchi, Tomio: *See—*
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Takeuchi, Toyohide: *See—*
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, 4,207,188, Cl. 210-198.00C.
Takeuchi, Yuzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.
Tallerico, William A.: *See—*
Pelensky, Joseph; and Tallerico, William A., 4,207,581, Cl. 346-139.00R.
Tam, Sebastian Y. K.; and Ghosh, Asoke K., to RCA Limited. Device and method of starting a long radiation source. 4,207,499, Cl. 315-111.100.
Tanaka, Akio, to Fuji Electric Co., Ltd. Coin sorting machine. 4,206,775, Cl. 133-3.00R.
Tanaka, Asami. Dental instrument. 4,206,547, Cl. 433-141.000.
Tanaka, Noboru, to Tokyo Pipe Co., Ltd. Cigarette lighter with synergistic igniting means. 4,207,055, Cl. 431-258.000.
Tanaka, Toshiki P.: *See—*
Onoda, Seiichi; Kawakami, Shojiro; Nishida, Shigeo; Tanaka, Toshiki P.; Suganuma, Tsuneo; and Sumi, Masao, 4,206,967, Cl. 350-96.330.
Taniguchi, Hayashi: *See—*
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Taniguchi, Toru, to Nikku Industry Co., Ltd. Heating apparatus. 4,207,064, Cl. 432-145.000.
Tanno, Toshihiro: *See—*
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Tanoue, Shizuo: *See—*
Ishibashi, Hiroaki; and Tanoue, Shizuo, 4,207,303, Cl. 423-321.00S.
Tansi, Hakki M.: *See—*
Ludwig, Melvin S.; and Tansi, Hakki M., 4,206,957, Cl. 339-40.000.
Tantillo, James M.; and Boulanger, Edward L., to Component Manufacturing Service, Inc. Electrical connector. 4,206,960, Cl. 339-61.00R.
Tartakovsky, Igor K. Helical rolling mill roll line for producing die-rolled sections and solids of revolution. 4,206,622, Cl. 72-95.000.
Tatematsu, Tatsuo: *See—*
Kumagai, Kiyoshi; Awamura, Toshio; Aikawa, Kiyoshi; and Tatematsu, Tatsuo, 4,206,944, Cl. 296-76.000.
Taylor, Dennis O.; Reid, David L.; Kincaid, Clarence E.; and Haefner, Donald R., to Cummins Engine Company, Inc. Test apparatus and method for an engine mounted fuel pump. 4,206,634, Cl. 73-119.00A.
Taylor, John B.: *See—*
Rowlands, David A.; and Taylor, John B., 4,207,318, Cl. 424-248.400.
Taylor, Joseph D. F., to Lucas Industries Limited. Battery charging systems for road vehicles. 4,207,512, Cl. 320-17.000.
Taylor, Lynn J.: *See—*
Tobias, John W.; and Taylor, Lynn J., 4,207,221, Cl. 260-28.50R.
Technology Development Corporation: *See—*
MacLeod, Norman C., 4,207,568, Cl. 340-852.000.
Teerman, Richard F., to General Motors Corporation. Injection timing nozzle with poppet valve. 4,206,635, Cl. 73-119.00A.
Tefft, Franklin A.: *See—*
Perez, Ricardo L.; Barnum, Ronald E.; and Tefft, Franklin A., 4,206,891, Cl. 244-17.130.
Teibow Company Limited: *See—*
Shimoishi, Tetsuo, 4,207,013, Cl. 401-265.000.
Teijin Limited: *See—*
Kadokura, Sadao; Honjo, Kazuhiko; and Kamei. Kazuhiro, 4,207,100, Cl. 430-48.000.
Sobajima, Shigenobu; Chiba, Kiyoshi; Itoh, Kunio; Yonemura, Utami; and Mitani, Yuji, 4,206,615, Cl. 62-248.000.
Tektronix, Inc.: *See—*
Tomison, William H.; Janko, Bozidar; Bostwick, Myron A., Jr.; and Silzars, Aris, 4,207,492, Cl. 315-3.000.
Teledyne Industries, Inc.: *See—*
Ramsey, Vernon B., 4,206,677, Cl. 84-107.000.
Teletype Corporation: *See—*
Heeren, Richard H., 4,207,616, Cl. 365-189.000.
Teliszczak, Pamela J.: *See—*
Kestner, Mark O.; and Teliszczak, Pamela J., 4,207,300, Cl. 423-299.000.
Temple, Victor A. K., to Electric Power Research Institute, Inc. Multiple gated light fired thyristor with non-critical light pipe coupling. 4,207,583, Cl. 357-38.000.
Tennant Company: *See—*
Kroll, Harley E.; and Thomsen, Donald L., 4,206,530, Cl. 15-340.000.
Tenneco Chemicals, Inc.: *See—*
Langford, Philip W., 4,207,310, Cl. 424-150.000.
Shepherd, David, 4,207,142, Cl. 162-158.000.
Teraji, Tsutomu: *See—*
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Texaco Inc.: *See—*
Bove, Francis S.; and Herbstman, Sheldon, 4,207,076, Cl. 44-56.000.
Bove, Francis S.; Sweeney, William M.; and Herbstman, Sheldon, 4,207,077, Cl. 44-56.000.
Cobb, John M., 4,206,730, Cl. 123-119.00A.
Herbstman, Sheldon; and Dorn, Peter, 4,207,079, Cl. 44-71.000.
Sweeney, William M.; and Dille, Kenneth L., 4,207,078, Cl. 44-68.000.
Texas Alkyls, Inc.: *See—*
Sanchez, Ramiro; Fannin, Loyd W.; and Malpass, Dennis B., 4,207,207, Cl. 252-431.00R.
Texas Instruments Incorporated: *See—*
Orcutt, John W., 4,206,645, Cl. 73-349.000.
Padovani, Francois A., 4,207,360, Cl. 427-213.000.
Rao, G. R. Mohan, 4,207,585, Cl. 357-41.000.
White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,207,618, Cl. 365-222.000.
Th. Goldschmidt AG: *See—*
Fock, Jurgen; Schamberg, Eckehard; and Schafer, Werner, 4,207,379, Cl. 428-480.000.
Thermatool Corporation: *See—*
Tudbury, Chester A., 4,207,451, Cl. 219-10.790.
Theurer, Richard; and Rittmann, Dieter, to Prontor-Werk Alfred Gauthier GmbH. Electromagnetic actuator for shutters for photographic cameras. 4,206,992, Cl. 354-235.000.
Thies, Peter W.; Asai, Akiji; and David, Samuel, to Kali Chemie Pharma GmbH. 2,9-Dioxatricyclo[4,3,1,$0^{3,7}$]decane derivatives and pharmaceutical compositions thereof. 4,207,331, Cl. 424-278.000.
Thomas J. Lipton, Inc.: *See—*
Visser, Johannes; and Bams, Gijsbert W. P., 4,207,349, Cl. 426-271.000.
Thompson Manufacturing Co.: *See—*
Williams, Tom, 4,206,901, Cl. 251-35.000.
Thomsen, Donald L.: *See—*
Kroll, Harley E.; and Thomsen, Donald L., 4,206,530, Cl. 15-340.000.
Thomson-CSF: *See—*
Vignier, Claude, 4,207,573, Cl. 343-727.000.
Thornton, Douglas; and Housholder, Arthur E. Programmable frequency scanning radio system. 4,207,522, Cl. 455-77.000.
Thrane, Gordon E.; and DePerro, Brian L., to Chemprene, Inc. Circumferentially compressed piston ring assembly and method. 4,206,930, Cl. 277-165.000.
Thuillier, Germaine; Laforest, Jacqueline; and Bessin, Pierre, to Albert Rolland S.A. Thienyl or furyl phenyl O-hetero amino alkyl oximes and use thereof. 4,207,319, Cl. 424-248.510.
Thukamoto, Sunao; and Yokokoji, Shyoji, to Toppan Printing Co., Ltd. Package for a sterilized material. 4,206,844, Cl. 206-439.000.
Ting, Hui-tzeng. Automobile fuel injection control device. 4,206,724, Cl. 123-32.0AE.
Tkatchenko, Igor: *See—*
Chauvin, Yves; Commereuc, Dominique; and Tkatchenko, Igor, 4,207,249, Cl. 260-449.60M.
Tobias, John W.; and Taylor, Lynn J., to Owens-Illinois, Inc. Degradable plastic composition containing unsaturated wax. 4,207,221, Cl. 260-28.50R.
Toda, Gyozo: *See—*
Suganuma, Tsuneo; Toda, Gyozo; Ishida, Koji; Satoh, Shin; Katsuyama, Toshio; and Sugie, Mamoru, 4,206,968, Cl. 350-96.330.
Togashi, Akira. Heat-conducting oval pipes in heat exchangers. 4,206,806, Cl. 165-82.000.
Toia, Michael J. Portable dipole antenna with end loading. 4,207,574, Cl. 343-752.000.
Tokuda, Kanji, to Fuji Photo Film Co., Ltd. Exposure control method for an automatic color printer with slope control. 4,206,998, Cl. 355-77.000.
Tokuda, Ryuji: *See—*
Sunouchi, Akio; Tokuda, Ryuji; Uchidoi, Masanori; Kumazawa, Kenichi; and Iwashita, Tomonori, 4,206,987, Cl. 354-44.000.
Tokyo Pipe Co., Ltd.: *See—*
Tanaka, Noboru, 4,207,055, Cl. 431-258.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Nakai, Kaichiro, 4,207,496, Cl. 315-39.530.
Tokyo Shibaura Electric Co., Ltd.: *See*—
Aisaka, Tatsuyoshi; Kawai, Mitsuo; Mori, Fumio; and Sugai, Shinzo, 4,207,381, Cl. 428-619.000.
Arai, Sakae, 4,207,452, Cl. 219-10.55A.
Koshigoe, Shinpei, 4,207,491, Cl. 313-412.000.
Takada, Keisuke, 4,206,641, Cl. 73-194.0EM.
Tsunoda, Sachio, 4,207,023, Cl. 415-106.000.
Toll, Karl D.: *See*—
Weatherford, Fred; and Toll, Karl D., 4,206,920, Cl. 273-138.00A.
Tom McGuane Industries, Inc.: *See*—
Ludwig, George C., 4,206,732, Cl. 123-122.00D.
Tomison, William H.; Janko, Bozidar; Bostwick, Myron A., Jr.; and Silzars, Aris, to Tektronix, Inc. Slow-wave high frequency deflection structure. 4,207,492, Cl. 315-3.000.
Tomita, Tsutomu; Kato, Masahito; and Doryo, Toshiaki, to Toyota Jidosha Kogyo Kabushiki Kaisha. Apparatus for fitting a cylinder head cover. 4,206,931, Cl. 277-166.000.
Topfer, Dieter: *See*—
Diels, Wolfgang; Krause, Dieter; and Topfer, Dieter, 4,206,527, Cl. 15-102.000.
Toppan Printing Co., Ltd.: *See*—
Ono, Masahiko, 4,207,069, Cl. 8-471.000.
Thukamoto, Sunao; and Yokokoji, Shyoji, 4,206,844, Cl. 206-439.000.
Toray Industries, Inc.: *See*—
Nagayasu, Tadahito; and Higuchi, Tomitake, 4,207,376, Cl. 428-367.000.
Tosuntikool, Nam; and Yapp, Robert, to GTE Automatic Electric Laboratories Incorporated. Constant percent break type dial pulse corrector. 4,207,436, Cl. 179-16.0EA.
Toussaint, Herbert: *See*—
Hoffmann, Herwig; Mueller, Herbert; Toussaint, Herbert; and Wittwer, Arnold, 4,207,263, Cl. 260-583.00R.
Tovrog, Benjamin S.: *See*—
Diamond, Steven E.; Mares, Frank; and Tovrog, Benjamin S., 4,207,305, Cl. 423-573.00R.
Towmotor Corporation: *See*—
Melocik, Grant C., 4,206,829, Cl. 180-290.000.
Townsend, Greg M., to Motorola, Inc. Sequential two tone detector. 4,207,474, Cl. 307-40.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Kawai, Noriaki; and Yamamoto, Heisuke, 4,206,729, Cl. 123-119.00A.
Sanada, Masakatsu; and Ito, Toshimitsu, 4,207,277, Cl. 261-130.000.
Sato, Yasushi; and Onaka, Hidemi, 4,206,731, Cl. 123-119.00A.
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.
Tomita, Tsutomu; Kato, Masahito; and Doryo, Toshiaki, 4,206,931, Cl. 277-166.000.
Yoshitsugu, Noritada; Yasumatsu, Jun; Katsuno, Mitsuaki; and Tsujiuchi, Yoshio, 4,206,886, Cl. 242-107.200.
Traubel, Harro; Konig, Klaus; Muller, Hans J.; and Zorn, Bruno, to Bayer Aktiengesellschaft. Reactive polyurethane coatings. 4,207,128, Cl. 156-77.000.
Travers, Douglas N.: *See*—
Hipp, Jackie E.; Travers, Douglas N.; Green, Terence C.; Sherrill, William M.; and Johnson, Richard L., 4,207,572, Cl. 343-113.00R.
Trebellas, John C.: *See*—
Martin, Preston K.; Hoffman, William A., III; and Trebellas, John C., 4,207,155, Cl. 204-159.230.
Treneules, Didier J.: *See*—
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., 4,207,008, Cl. 366-309.000.
Trenne, Myron U., to General Motors Corporation. Hydraulic valve actuator system. 4,206,728, Cl. 123-90.120.
Tretola, Angelo R., to Bell Telephone Laboratories, Incorporated. Method of controlling a plasma etching process by monitoring the impedance changes of the RF power. 4,207,137, Cl. 156-627.000.
Trimble, Lyne S.; and Naylor, Florence A., to said Lyne S. Trimble; by said Florence A. Naylor. Apparatus and method for producing high sensitivity magnetochemical particles. 4,206,866, Cl. 228-172.000.
Trio Engineering Limited: *See*—
Barber, Bernard, 4,207,130, Cl. 156-244.130.
Trocsanyi, Zeno: *See*—
Csikos, Rezso; Decsy, Zoltan; Trocsanyi, Zeno; Varga, Zsolt; and Wittman, Zsuzsa, 4,207,261, Cl. 260-580.000.
Trombly, John E., to Eastern Company, The. Lock system. 4,207,555, Cl. 340-147.0MD.
Truax, Clarence E.; and Tuskos, Michael E. Mower device. 4,206,580, Cl. 56-10.400.
TRW Inc.: *See*—
Drutchas, Gilbert H.; Cass, Richard; and Suttkus, David J., 4,207,033, Cl. 417-251.000.
Elverum, Gerard W., Jr., 4,206,594, Cl. 60-258.000.
Tsuboki, Noboru: *See*—
Susaki, Akihiro; Tsuboki, Noboru; Amino, Kyoichi; and Hosoya, Minoru, 4,206,788, Cl. 141-1.000.
Tsuchiya, Isamu: *See*—
Hatakenaka, Fujio; Sato, Hisaaki; Tsuchiya, Isamu; Murata, Shigemoto; and Morishita, Yoji, 4,207,494, Cl. 315-5.350.
Tsuda, Shinichi; Nakajo, Yoshio; Tagawa, Kenkichi; Hirai, Hayami; and Takagi, Shunji, to Rank Xerox, Ltd. Fixing device for use in electrophotographic copying machine. 4,207,057, Cl. 432-59.000.
Tsuda, Takao; Hibi, Kiyokatsu; Takeuchi, Toyohide; Nakanishi, Tomohiko; Ishii, Daido; and Mochizuki, Koichi, to Japan Spectroscopic Co. Ltd. Open tubular capillary column for high-speed micro liquid chromatography. 4,207,188, Cl. 210-198.00C.
Tsujiuchi, Yoshio: *See*—
Yoshitsugu, Noritada; Yasumatsu, Jun; Katsuno, Mitsuaki; and Tsujiuchi, Yoshio, 4,206,886, Cl. 242-107.200.
Tsunoda, Sachio, to Tokyo Shibaura Electric Co., Ltd. Multistage hydraulic machine. 4,207,023, Cl. 415-106.000.
Tsuyuki, Isao: *See*—
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,207,157, Cl. 204-180.00P.
Tuci, Giulio: *See*—
Beretta, Germano; Seveso, Cesare; and Tuci, Giulio, 4,207,427, Cl. 174-26.00R.
Tucker, Paul A.: *See*—
Blatchford, Brian G.; and Tucker, Paul A., 4,206,519, Cl. 3-27.000.
Tudbury, Chester A., to Thermatool Corporation. Multi-layered electrical induction coil subjected to large forces. 4,207,451, Cl. 219-10.790.
Tudor, George A.: *See*—
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,207,368, Cl. 428-172.000.
Turley, Richard J., to Olin Corporation. Tetrachloro-butyl secondary phosphites. 4,207,272, Cl. 260-967.000.
Turner, Jesse H.; and Kaduk, Charles L., to Essex Group, Inc. Igniter and flame sensor assembly for gas burning appliance. 4,207,053, Cl. 431-59.000.
Tuska, James W.; and Robbi, Anthony D., to RCA Corporation. Impedance measuring circuit. 4,206,648, Cl. 73-362.0AR.
Tuskos, Michael E.: *See*—
Truax, Clarence E.; and Tuskos, Michael E., 4,206,580, Cl. 56-10.400.
Tuson, Samuel, to Enterprise d'Equipments Mecaniques et Hydraulics E.M.H. Equipment for connecting oil-tankers to marine towers. 4,206,782, Cl. 137-615.000.
Tyan, Yuan-Sheng, to Eastman Kodak Company. Polycrystalline thin film CdS/CdTe photovoltaic cell. 4,207,119, Cl. 136-89.0TF.
Tyler, Kenneth E. Structured art surface. 4,207,366, Cl. 428-73.000.
Tyson, Donald R.; and Yates, Robert W., to Redken Laboratories, Inc. Projection microscope with film holder. 4,206,966, Cl. 350-19.000.
Uchida, Isamu: *See*—
Kobori, Toshio; and Uchida, Isamu, 4,206,991, Cl. 354-225.000.
Uchida, Takashi: *See*—
Fujiwhara, Mitsuto; Sasaki, Takashi; and Uchida, Takashi, 4,207,111, Cl. 430-376.000.
Uchidoi, Masanori: *See*—
Sunouchi, Akio; Tokuda, Ryuji; Uchidoi, Masanori; Kumazawa, Kenichi; and Iwashita, Tomonori, 4,206,987, Cl. 354-44.000.
Udagawa, Yutaka: *See*—
Furusawa, Akira; and Udagawa, Yutaka, 4,207,448, Cl. 200-159.00B.
Uede, Taisei: *See*—
Daikoku, Takahiro; Nakayama, Wataru; and Uede, Taisei, 4,207,550, Cl. 336-60.000.
Ueno, Ryuzo; Matsuda, Toshio; and Inamine, Shigeo, to Kabushika Kaisha Ueno Seiyakuoyo Kenkyujo. Process for preserving process cheese. 4,207,350, Cl. 426-334.000.
Ullrich, Georg: *See*—
Frankenberger, Horst; Heller, Dieter; and Ullrich, Georg, 4,207,160, Cl. 204-195.00P.
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai. Anthracycline antibiotics. 4,207,313, Cl. 424-181.000.
Union Carbide Corporation: *See*—
Kagetsu, Tadashi J.; De Atley, William B.; and Fox, Joseph S., 4,207,295, Cl. 423-55.000.
Lustig, Stanley; and Anthony, John, 4,207,363, Cl. 428-35.000.
Nakabayashi, Masahiro, 4,207,121, Cl. 148-26.000.
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., 4,207,353, Cl. 426-513.000.
Unisearch Limited: *See*—
Chaikin, Malcolm; and McCracken, John R., 4,207,244, Cl. 260-397.250.
United Catalysts Inc.: *See*—
Russ, Karl J.; and Broughton, Donald R., 4,207,211, Cl. 252-466.00J.
United States of America
Agriculture: *See*—
Blanchard, Eugene J.; Bruno, Joseph S.; and Gautreaux, Gloria A., 4,207,068, Cl. 8-493.000.
Air Force: *See*—
Buck, Daniel C., 4,207,547, Cl. 333-209.000.
Erbacher, John K.; Hussey, Charles L.; and King, Lowell A., 4,207,388, Cl. 429-112.000.
Flora, John H.; and Gruber, Henry T., 4,207,520, Cl. 324-238.000.
Helminiak, Thaddeus E.; Benner, Charles L.; Arnold, Fred E.; and Husman, George E., 4,207,407, Cl. 525-425.000.
Hudak, Joseph M.; Zielinski, Gerald L.; and Messenger, Charles G., 4,207,460, Cl. 455-612.000.
McDowell, Hunter L., 4,207,495, Cl. 315-39.300.

Morris, John R.; and Grant, Robert L., 4,207,594, Cl. 358-107.000.
Poirier, J. Leon, 4,207,560, Cl. 340-552.000.
Shen, Peter I., 4,207,542, Cl. 331-94.50G.

Army: *See—*
Iqbal, Zafar; Fair, Harry D., Jr.; and Downs, David S., 4,206,705, Cl. 102-23.000.
Riley, Leon H., 4,207,434, Cl. 370-112.000.

National Aeronautics and Space Administration: *See—*
Bill, Robert C.; and Ludwig, Lawrence P., 4,207,024, Cl. 415-174.000.
Kahlbaum, William M., Jr., 4,206,970, Cl. 350-175.00E.
Ryason, Porter R., 4,206,713, Cl. 110-347.000.

Navy: *See—*
Anderson, Lloyd D., 4,207,623, Cl. 367-133.000.
Christe, Karl O., 4,207,124, Cl. 149-92.000.
Chubb, Talbot A., 4,206,746, Cl. 126-438.000.
Clearwaters, Walter L.; and Einstein, Lloyd T., 4,207,621, Cl. 367-122.000.
Klund, William E.; Littrell, Woodrow H.; and Isaak, Robert D., 4,207,625, Cl. 367-135.000.
McKechnie, John C.; and Grimmer, Paul D., 4,206,633, Cl. 73-105.000.
Miller, Harry B., 4,207,622, Cl. 367-126.000.
Mittleman, John, 4,207,450, Cl. 250-343.000.
Wedding, Leon E.; and Gilbert, William H., 4,207,626, Cl. 367-142.000.

Veterans Affairs: *See—*
Spenney, Jerry G., 4,207,308, Cl. 424-1.000.

U.S. Philips Corporation: *See—*
Dittrich, Jurgen; Heinzerling, Jurgen; and Lux, Peter, 4,207,595, Cl. 358-111.000.
Esser, Leonard J. M., 4,207,477, Cl. 307-221.00D.
Frens, Gerrit, 4,207,614, Cl. 365-32.000.
Harada, Masaki; and Mikami, Tokuhiro, 4,207,430, Cl. 179-1.00F.
Lebailly, Jacques, 4,207,586, Cl. 357-52.000.
Van der Ven, Robert F. L. M., 4,207,490, Cl. 313-403.000.

United States Steel Corporation: *See—*
Forciea, James E., 4,206,878, Cl. 241-20.000.
Secrist, Walter S., 4,207,036, Cl. 417-431.000.

United Technologies Corporation: *See—*
Cole, Edward F., 4,206,595, Cl. 60-39.09F.
Grudkowski, Thomas W.; Montress, Gary K.; and Reeder, Thomas M., 4,207,545, Cl. 333-150.000.
Grudkowski, Thomas W., 4,207,546, Cl. 333-152.000.
Hendrix, Tony D., 4,206,636, Cl. 73-132.000.
Metcalfe, Robert A.; and Bourdeau, Romeo G., 4,207,040, Cl. 425-8.000.
Miller, Guy W., 4,206,865, Cl. 228-152.000.
Perez, Ricardo L.; Barnum, Ronald E.; and Tefft, Franklin A., 4,206,891, Cl. 244-17.130.

University of Michigan: *See—*
Voorhees, John J.; and Russell, Diane H., 4,207,315, Cl. 424-200.000.

University of Queensland, The: *See—*
Lynch, Alban J.; and Gallagher, Eugene, 4,207,001, Cl. 356-335.000.

University Patents, Inc.: *See—*
Voorhees, John J.; and Russell, Diane H., 4,207,315, Cl. 424-200.000.

Uno, Shigeo: *See—*
Matsuda, Shinpei; Sakuta, Youichi; Kamo, Tomoichi; Uno, Shigeo; Takeuchi, Masato; Imahashi, Jinichi; Okada, Hideo; Kato, Akira; and Nakajima, Fumito, 4,207,209, Cl. 252-462.000.

UOP Inc.: *See—*
Antos, George J., 4,207,170, Cl. 208-139.000.
Antos, George J., 4,207,172, Cl. 208-139.000.
Antos, George J., 4,207,425, Cl. 585-434.000.
Christman, William J., 4,207,174, Cl. 208-226.000.
Flagg, John F.; and Antos, George J., 4,207,171, Cl. 208-139.000.
Imai, Tamotsu, 4,207,260, Cl. 260-577.000.
Mitsche, Roy T.; and Pope, George N., 4,207,426, Cl. 585-482.000.
Nolley, John P., Jr., 4,206,722, Cl. 122-1.00A.
Stansky, Charles A., Jr., 4,207,173, Cl. 208-207.000.
Tadewald, Thomas D., 4,207,129, Cl. 156-242.000.

Uozumi, Junzo: *See—*
Sumiyoshi, Masaharu; Sekiya, Setsuro; Motosugi, Katsuhiko; Uozumi, Junzo; Ando, Tsuneo; Takeuchi, Yuzo; and Minoura, Mikio, 4,206,599, Cl. 60-285.000.

Upadhyayula, Lakshminarasimha C., to RCA Corporation. Exclusive OR circuit. 4,207,476, Cl. 307-216.000.

Upjohn Company, The: *See—*
Axen, Udo F., 4,207,420, Cl. 560-121.000.
Carleton, Peter S., 4,207,265, Cl. 568-385.000.
Lincoln, Frank H., 4,207,242, Cl. 260-347.400.
McCall, John M., 4,207,239, Cl. 549-9.000.
Morozowich, Walter, 4,207,257, Cl. 260-558.00R.
Smith, Herman W., 4,207,422, Cl. 568-807.000.

USM Corporation: *See—*
Hold, Peter; and Tadmor, Zehev, 4,207,004, Cl. 366-97.000.

Vale, Wylie W., Jr.: *See—*
Brown, Marvin R.; Rivier, Jean E. F.; and Vale, Wylie W., Jr., 4,207,311, Cl. 424-177.000.

Valeron Corporation, The: *See—*
Juengel, Richard O.; and Cook, Kenneth J., 4,207,567, Cl. 340-680.000.

Valyi, Emery I. Apparatus for the preparation of hollow plastic articles. 4,207,134, Cl. 156-423.000.

Valyi, Zoltan: *See—*
Van Gheluwe, Joris E. A.; Valyi, Zoltan; Knudsen, Finn B.; and Dadic, Miroslav, 4,207,345, Cl. 426-11.000.

Van Cleave, Herbert N.: *See—*
Scholtes, Edward L.; and Van Cleave, Herbert N., 4,206,804, Cl. 165-40.000.

van der Lely, Cornelis. Agricultural tractor with narrow rear body having lifting device links which function as scrapers for mud or the like on the rear tires. 4,206,825, Cl. 180-77.00S.

Van der Ven, Robert F. L. M., to U.S. Philips Corporation. Shadow mask having apertures divided into symmetrical halves by isolated conductors. 4,207,490, Cl. 313-403.000.

Vanderwerf, Dennis F.: *See—*
Cobb, Sanford; Conder, Terrence M.; and Vanderwerf, Dennis F., 4,206,969, Cl. 350-126.000.

Van Gheluwe, Joris E. A.; Valyi, Zoltan; Knudsen, Finn B.; and Dadic, Miroslav, to Molson Companies Limited, The. Abbreviated brewing process. 4,207,345, Cl. 426-11.000.

van Koten, Gerard: *See—*
Noltes, Jan G.; van Koten, Gerard; and Cohen, Murray S., 4,207,213, Cl. 252-474.000.

Vannest, Richard D.: *See—*
Aldridge, Clifton, Jr.; Jones, Paul W.; Gibson, Sandra F.; Vannest, Richard D.; Holen, James T.; Keyser, George F.; and Meyer, Michael C., 4,207,394, Cl. 435-34.000.

Vapor Corporation: *See—*
Barthel, Horst; and Bell, Robert R., 4,206,902, Cl. 251-57.000.

Varga, Zsolt: *See—*
Csikos, Rezso; Decsy, Zoltan; Trocsanyi, Zeno; Varga, Zsolt; and Wittman, Zsuzsa, 4,207,261, Cl. 260-580.000.

Varian Associates, Inc.: *See—*
Scholl, Richard A.; and Cole, John L., 4,207,293, Cl. 422-249.000.

Varta Batterie Aktiengesellschaft: *See—*
Oliapuram, V. Anthony, 4,207,383, Cl. 429-48.000.

Vatsky, Joel, to Foster Wheeler Energy Corporation. Fuel-staging coal burner. 4,206,712, Cl. 110-264.000.

Vegh, George, to Gybro Industries Ltd. Method and apparatus for shaping a strip. 4,206,625, Cl. 72-181.000.

Venot, Jean, to ASA S.A. Machine for throwing and twisting yarns. 4,206,588, Cl. 57-80.000.

Vento, Kyosti T.: *See—*
Ronkainen, Pentti P.; Leppanen, Olavi A.; Vento, Kyosti T.; and Pesonen, Heimo K., 4,207,276, Cl. 261-114.00A.

Vermilyea, Barry L.; Crossen, Fred W., Jr.; and Mohar, Douglas D., to International Multifoods Corporation. Food item and method of preparation. 4,207,348, Cl. 426-95.000.

Verwaerde, Michel: *See—*
Su, Cyril K. M.; and Verwaerde, Michel, 4,206,593, Cl. 60-39.040.

Verzinkerei Zug AG: *See—*
Iten, Kurt; and Hochuli, Franz, 4,206,853, Cl. 220-94.00R.

Vickerys Limited: *See—*
Klemz, David B., 4,206,528, Cl. 15-256.510.

Viel, Floyd W. Rotary rock windrower. 4,206,812, Cl. 171-63.000.

Vignier, Claude, to Thomson-CSF. Dual-frequency antenna system with common reflector illuminated by different feeds. 4,207,573, Cl. 343-727.000.

Vin-Lyn Enterprises, Inc.: *See—*
Bivona, Vincent J., 4,206,558, Cl. 36-7.500.

Vinals, Joaquin F.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,207,214, Cl. 252-522.00R.

Vinci, Rene A.: *See—*
Guillem, Guy; Vinci, Rene A.; and Roche, Gilbert C., 4,206,917, Cl. 273-73.00E.

Visser, Johannes; and Bams, Gijsbert W. P., to Thomas J. Lipton, Inc. Protein fibres. 4,207,349, Cl. 426-271.000.

Vita-Stat Neducak Services, Inc.: *See—*
Huber, Thomas G., 4,206,765, Cl. 128-677.000.

Vize, Robert M.: *See—*
Johnson, John L., Jr.; Vize, Robert M.; and Wiggins, Noel D., 4,206,726, Cl. 123-41.350.

Vock, Manfred H.: *See—*
Sprecker, Mark A.; Schmitt, Frederick L.; Vock, Manfred H.; Vinals, Joaquin F.; and Kiwala, Jacob, 4,207,214, Cl. 252-522.00R.

Voelkel, Andreas: *See—*
Adelhardt, Georg; Buettner, Karl; Feichtner, Walter; Hasselberg, Herbert; and Voelkel, Andreas, 4,206,889, Cl. 242-128.000.

Vofsi, David; Halmann, Martin M.; and Yanai, Saul, to Yeda Research & Development Co. Ltd. Phosphorus containing polyols. 4,207,417, Cl. 536-117.000.

Vola, Mathias J. J. M.; and Draai, Willem T., to Oce-van der Grinten N.V. Process for magnetically transferring a powder image. 4,207,101, Cl. 430-126.000.

Volgren, Richard L.: *See—*
Krueger, Dennis L.; and Volgren, Richard L., 4,206,980, Cl. 350-359.000.

Vollhardt, Frohmut: *See—*
Ackermann, Werner; and Vollhardt, Frohmut, 4,207,065, Cl. 432-195.000.

Volvo Car B.V.: *See—*
Rijsdijk, Jan, 4,206,659, Cl. 74-230.17E.

Von Roll AG: *See—*
Dobler, Otto, 4,206,905, Cl. 251-328.000.
von Bebenburg, Walter; Schulmeyer, Norbert; and Jakovlev, Vladimir, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. 6-Aryl-s-triazolo-(4,3-alpha)-pyrido-(2,3-f)-(1,4)-diazepines. 4,207,322, Cl. 424-256.000.
von Bonin, Wulf, to Bayer Aktiengesellschaft. Stable suspensions of inorganic fillers in organic polyhydroxyl compounds. 4,207,227, Cl. 260-40.0TN.
von Chiari, Bernd: *See—*
Schuster, Peter; and von Chiari, Bernd, 4,207,114, Cl. 106-40.00R.
von der Eltz, Hans-Ulrich: *See—*
Petersohn, Gerhard; von der Eltz, Hans-Ulrich; Birke, Walter; and Schon, Franz, 4,207,058, Cl. 432-59.000.
Voorhees, John J.; and Russell, Diane H., to University Patents, Inc.; and University of Michigan. Process for treating proliferative skin diseases using certain diamino compounds. 4,207,315, Cl. 424-200.000.
VSC Company, The: *See—*
Schiffman, Murray M., 4,207,440, Cl. 179-100.1VC.
Vyzkumny ustav tvarecich stroju a technologie tvareni: *See—*
Kovar, Jan; and Drkal, Jan, 4,206,623, Cl. 72-108.000.
Wacker-Chemie GmbH: *See—*
Kunstle, Gerhard; and Jung, Herbert, 4,207,259, Cl. 260-561.00K.
Waggon Union GmbH: *See—*
Kramer, Rolf; Schneider, Felix; and Kampmann, Gerhard, 4,206,571, Cl. 49-340.000.
Wagner, Eugene R.; and McDermott, Roger D., to Dow Chemical Company, The. Method for treating hyperglycemia in mammals using arylamino benzoic acids. 4,207,330, Cl. 424-275.000.
Waldman, Richard C.: *See—*
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., 4,207,353, Cl. 426-513.000.
Walker, Gordon N., to Ciba-Geigy Corporation. 1-Aryl-4-carbamoyl-pyrazolin-5-ones. 4,207,317, Cl. 424-245.000.
Walling, Jorg-Hein, to Northern Telecom Limited. Powder ejection nozzle for strander. 4,206,790, Cl. 141-250.000.
Walsh, Robert F. Manually operable grass seeder. 4,206,714, Cl. 111-92.000.
Walter, Lothar: *See—*
Ernst, Horst; Olschewski, Armin; Walter, Lothar; and Brandenstein, Manfred, 4,206,951, Cl. 308-6.00C.
Olschewski, Armin; Kunkel, Heinrich; Brandenstein, Manfred; and Walter, Lothar, 4,206,952, Cl. 308-8.200.
Walz, Fredrick J., to Steelcase Inc. Wood desk top. 4,206,576, Cl. 52-291.000.
Wang, Samuel S.; and Smith, Eugene L., Jr., to American Cyanamid Company. Process for beneficiation of phosphate and iron ores. 4,207,178, Cl. 209-166.000.
Wang, Samuel S.; Lewellyn, Morris E.; and Dugan, Charles, to American Cyanamid Company. Process for dewatering mineral concentrates. 4,207,186, Cl. 210-54.000.
Wankel GmbH: *See—*
Eiermann, Dankwart, 4,207,039, Cl. 418-77.000.
Ward, Robert A., to Plymouth Rubber Company, Inc. Cable splicing technique. 4,207,429, Cl. 174-88.00R.
Warner Electric Brake & Clutch Co.: *See—*
Baer, John S., 4,207,483, Cl. 310-49.00R.
Warner-Lambert Company: *See—*
Capps, David B.; Angelo, Mario M.; and Culbertson, Townley P., 4,207,320, Cl. 424-248.560.
Washbourn, Jack: *See—*
Rathband, Clive A.; Washbourn, Jack; and Wickham, David J., 4,206,949, Cl. 303-38.000.
Watase, Kazumi: *See—*
Hirai, Hiroyuki; Matsushita, Sachio; Tsuyuki, Isao; and Watase, Kazumi, 4,207,157, Cl. 204-180.00P.
Water Refining Company, Inc.: *See—*
Davis, Stephen H.; and Etzel, James E., 4,207,397, Cl. 521-26.000.
Watson, Gary E.; Simi, Edward A.; and Miller, Richard R., to Douglas Dynamics, Inc. Single lever hydraulic system control mechanism. 4,206,602, Cl. 60-433.000.
Watson, Robert W.: *See—*
Diehl, Rodney A.; Douglas, Henry; and Watson, Robert W., 4,206,953, Cl. 308-9.000.
Waugh, Robert E., to D. L. Auld Company, The. Method for coating glass containers. 4,207,356, Cl. 427-55.000.
Wauters, Ronald P.; Cochran, Stuart A.; and Kenyon, Ralph E., to General Foods Corporation. Process for making high density bread for use in a stuffing mix. 4,207,346, Cl. 426-19.000.
Wavin B.V.: *See—*
Graafmann, Jurgen; and Setzer, Eberhart, 4,206,785, Cl. 138-149.000.
Weatherford, Fred; and Toll, Karl D. Multiple digit electronic game. 4,206,920, Cl. 273-138.00A.
Webb, Michael G., to British Petroleum Company Limited, The. Anti-pollution boom. 4,207,191, Cl. 210-242.00S.
Weber, Alfred: *See—*
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.
Wedding, Leon E.; and Gilbert, William H., to United States of America, Navy. Acoustic decoy and jammer. 4,207,626, Cl. 367-142.000.
Week, Robert D.; Johnson, Orlin W.; and Kerber, Dathan R., to International Harvester Company. Cutterbar floatation system. 4,206,583, Cl. 56-15.800.
Weger, Wayne D.: *See—*
French, David W.; Faber, Richard C.; and Weger, Wayne D., 4,207,283, Cl. 264-322.000.
Wehinger, Egbert: *See—*
Moller, Eike; Meng, Karl-August, deceased; Wehinger, Egbert; Horstmann, Harald; and Seuter, Friedel, 4,207,325, Cl. 424-273.00P.
Weil, Edward D.: *See—*
Honig, Milton L.; and Weil, Edward D., 4,207,271, Cl. 260-953.000.
Weingarth, Frederick C. Element for conducting light to an outside surface of furnishing article. 4,207,608, Cl. 362-410.000.
Weisman & Allen: *See—*
Williams, William J., 4,206,764, Cl. 128-677.000.
Weiss, Michael D. Sample tube holder. 4,207,289, Cl. 422-104.000.
Welch, Robert B.; and Griffith, Joseph W., to Welch, Robert B. Loudspeaker coupler. 4,206,831, Cl. 181-159.000.
Weldon, John F., to Fire Rite, Inc. Retractable gantry heat treat furnace. 4,207,066, Cl. 432-225.000.
Wendt, Hans: *See—*
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.
Weresch, Thomas. Device for bending, crimping, and trimming leads of transistors or similar components. 4,206,539, Cl. 29-566.300.
Werginz, Karl, to Litton Systems, Inc. Cone crusher anti-spin mechanism. 4,206,881, Cl. 241-207.000.
Werner & Pfleiderer: *See—*
Kolb, Dieter; Kopp, Eugen; and Muller-Sybrichs, Manfred, 4,207,047, Cl. 425-146.000.
Wernsing, William O. Digital system for control of an electric typewriter. 4,207,010, Cl. 400-66.000.
Wertheimer, Joseph: *See—*
Pearson, Rune S., 4,206,912, Cl. 271-154.000.
Wesemeier, Reinhard: *See—*
Horstmann, Bernhard; and Wesemeier, Reinhard, 4,206,661, Cl. 74-606.00R.
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., to Leesona Corporaton. Container lining method. 4,207,280, Cl. 264-153.000.
Western Electric Company, Inc.: *See—*
Chisholm, William M., 4,206,543, Cl. 29-739.000.
Westinghouse Brake & Signal Co. Ltd.: *See—*
Rathband, Clive A.; Washbourn, Jack; and Wickham, David J., 4,206,949, Cl. 303-38.000.
Westinghouse Electric Corp.: *See—*
Martel, Robert J.; and Ewanus, Walter, 4,207,525, Cl. 455-109.000.
Neumeyer, Charles L.; and Pietsch, Herbert E., 4,207,482, Cl. 310-45.000.
Reynolds, William T.; and Foster, Karl, 4,207,123, Cl. 148-113.000.
Westvaco Corporation: *See—*
Glomb, John W.; and Closset, Gerard P., 4,207,143, Cl. 162-207.000.
Wetmore, Judson D., to Raychem Corporation. Heat recoverable article with fusible member. 4,206,786, Cl. 138-178.000.
Weyer, Rudi: *See—*
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,207,341, Cl. 424-319.000.
Whallon, William P., Jr.: *See—*
Hall, James R.; and Whallon, William P., Jr., 4,206,958, Cl. 339-49.00R.
Whike, Alan S.: *See—*
Ellison, Kenneth; and Whike, Alan S., 4,206,553, Cl. 34-28.000.
White Consolidated Industries, Inc.: *See—*
Smith, Robert; and Heighton, Douglas C., 4,206,897, Cl. 248-505.000.
White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. On-chip refresh for dynamic memory. 4,207,618, Cl. 365-222.000.
Whitehead, Arthur L. Apparatus for molded ice sculpture. 4,206,899, Cl. 249-139.000.
Whittaker Corporation: *See—*
Mansukhani, Ishwar R., 4,207,577, Cl. 346-1.100.
Wick, Manfred: *See—*
Hafner, Walter; Markl, Erich; Eibel, Ludwig; Kreis, Gerhard; Samrowski, Dietrich; Wick, Manfred; Deubzer, Bernward; and Friedrich, Wilhelm, 4,207,246, Cl. 556-439.000.
Wickham, David J.: *See—*
Rathband, Clive A.; Washbourn, Jack; and Wickham, David J., 4,206,949, Cl. 303-38.000.
Wiechert, Rudolf: *See—*
Schottle, Ernst; Weber, Alfred; Kennecke, Mario; Dahl, Helmut; Kapp, Joachim-Friedrich; Wendt, Hans; Annen, Klaus; Laurent, Henry; and Wiechert, Rudolf, 4,207,316, Cl. 424-243.000.
Wiedemann, Bernard W.: *See—*
Cartier, Jean-Pierre L.; Leneveu, Louis J. J.; Peyrard, Jean-Marc; Wiedemann, Bernard W.; and Treneules, Didier J., 4,207,008, Cl. 366-309.000.
Wiese, Klaus H.; and Sullivan, James P., to Kaiser Steel Corporation. Ingot mold cap removing and handling apparatus. 4,206,848, Cl. 212-4.000.
Wiezer, Hartmut: *See—*
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,207,270, Cl. 260-927.00R.

Wiggins, Noel D.: *See*—
Johnson, John L., Jr.; Vize, Robert M.; and Wiggins, Noel D., 4,206,726, Cl. 123-41.350.
Wild, Anton J. Universal bottle suspension device. 4,206,941, Cl. 294-87.260.
Wilhelm Gail'sche Tonwerke KGaA: *See*—
Otto, Joachim, 4,207,371, Cl. 428-212.000.
Wm. T. Burnett & Co., Inc.: *See*—
Lewis, Fielding H., Jr., 4,206,918, Cl. 273-326.000.
Williams, Gary E.: *See*—
Schneider, Donald E.; Tudor, George A.; and Williams, Gary E., 4,207,368, Cl. 428-172.000.
Williams, Haydn W. R.; Cragoe, Edward J., Jr.; and Rooney, Clarence S., to Merck & Co., Inc. Derivatives of glycolic and glyoxylic acid as inhibitors of glycolic acid oxidase. 4,207,329, Cl. 424-274.000.
Williams, Tom, to Thompson Manufacturing Co. Pressure-actuated valve with metering choke. 4,206,901, Cl. 251-35.000.
Williams, William J., to Weisman & Allen. Method and apparatus for analyzing cardiovascular systems. 4,206,764, Cl. 128-677.000.
Williams, William J., to Rockwell International Corporation. Brake assembly. 4,206,834, Cl. 188-341.000.
Williams, Willie L. Bedside foot-rest. 4,206,525, Cl. 5-507.000.
Willis, Gordon A., to Borg-Warner Corporation. Valve operator. 4,206,900, Cl. 251-14.000.
Wilson, Gregg, to CBS Inc. Electric Spanish guitar, and nut incorporated therein. 4,206,679, Cl. 84-314.00N.
Wilson, Stephen S., to Kilo Corporation. Object identification system. 4,207,468, Cl. 250-341.000.
Wilson, William. Method of mixing and discharging materials. 4,207,006, Cl. 366-220.000.
Wilwerding, Dennis J., to Honeywell Inc. Continuous focus proportional controller. 4,207,461, Cl. 250-201.000.
Wingrove, Robert C., to Medical Devices, Inc. Urological drainage monitor. 4,206,767, Cl. 128-762.000.
Winn, Melvin: *See*—
Bartholomay, William G.; Couturier, Gordon W.; Ghosh, Suhas; and Winn, Melvin, 4,207,433, Cl. 370-13.000.
Winnick, Charles N., to Halcon Research & Development Corporation. Catalytic process for dehydration of alcohols. 4,207,424, Cl. 585-357.000.
Winter, Hermann: *See*—
Kalka, Josef; and Winter, Hermann, 4,207,412, Cl. 528-499.000.
Wintle, Richard. Sleeve assembly. 4,206,909, Cl. 269-47.000.
Winton, Wilbur P.: *See*—
West, George A.; Kent, William F.; Pickard, George L.; and Winton, Wilbur P., 4,207,280, Cl. 264-153.000.
Witte, Ernst-Christian: *See*—
Hubner, Manfred; Kuhnle, Hans; Witte, Ernst-Christian; Heerdt, Ruth; Weyer, Rudi; and Hitzel, Volker, 4,207,341, Cl. 424-319.000.
Wittman, Zsuzsa: *See*—
Csikos, Rezso; Decsy, Zoltan; Trocsanyi, Zeno; Varga, Zsolt; and Wittman, Zsuzsa, 4,207,261, Cl. 260-580.000.
Witton, Norman N. Support device. 4,206,752, Cl. 128-79.000.
Wittwer, Alvin L.: *See*—
Gaitten, Ronald E.; Jachimiak, Paul D.; Machmer, James A.; and Wittwer, Alvin L., 4,207,059, Cl. 432-60.000.
Wittwer, Arnold: *See*—
Hoffmann, Herwig; Mueller, Herbert; Toussaint, Herbert; and Wittwer, Arnold, 4,207,263, Cl. 260-583.00R.
Wohrer, Luis C.: *See*—
Economy, James; Frechette, Francis J.; and Wohrer, Luis C., 4,207,408, Cl. 525-503.000.
Wolff, Egon E.: *See*—
Beckham, Joel M.; Easterling, Gene B.; Ringel, Reginald K.; and Wolff, Egon E., 4,206,818, Cl. 172-781.000.
Wolfinger, Mark D., to Monsanto Company. 3-(tert-Alkylthio)-1,3-thiazolidin-2,4-dione. 4,207,236, Cl. 548-183.000.
Wong, Jack: *See*—
Wong, Willie; Wong, Jack; and Wong, Yit C., 4,206,561, Cl. 43-53.500.
Wong, Willie; Wong, Jack; and Wong, Yit C. Fish hook extractor. 4,206,561, Cl. 43-53.500.
Wong, Yit C.: *See*—
Wong, Willie; Wong, Jack; and Wong, Yit C., 4,206,561, Cl. 43-53.500.
Woodbury, James R., to SRI International. Control method and means for efficient operation of brushless d-c motors over a wide range of operating conditions. 4,207,510, Cl. 318-802.000.
Woodcock, Carl L. Basketball practice device. 4,206,915, Cl. 273-1.50A.
Woods, Martin E.: *See*—
Jorgensen, August H., Jr.; and Woods, Martin E., 4,207,218, Cl. 260-23.70M.
Worcester Controls Corporation: *See*—
Gonzalez, Ricardo; Sumner, Charles A.; and Sanctuary, Robert E., 4,206,686, Cl. 91-386.000.
Worrallo, Anthony C. Hollow rod joint connection. 4,207,014, Cl. 403-187.000.
Woxland, Robert J., to Paxall, Inc. Carton closure outfolder. 4,206,579, Cl. 53-484.000.
Wright, John B.; and Schad, Robert D., to Husky Injection Molding Systems Limited. Stripper mechanism for injection mold. 4,207,051, Cl. 425-556.000.
Wristers, Harry J., to Exxon Research & Engineering Co. Reduction of $TiCl_4$ with reducing agents modified with Lewis bases. 4,207,205, Cl. 252-429.00B.
Wu, E-Ming: *See*—
Chapman, Derek D.; and Wu, E-Ming, 4,207,104, Cl. 430-225.000.
Wulf, Helmut: *See*—
Mehren, Herbert; and Wulf, Helmut, 4,206,605, Cl. 60-545.000.
Wurr, Jurgen; and Korting, Reinhard, to Polysius AG. Drive for rotary kilns, mills and the like. 4,206,836, Cl. 192-7.000.
Xerox Corporation: *See*—
Legg, Ernest L., 4,206,995, Cl. 355-14.00C.
Plaza, Mario G., 4,206,859, Cl. 226-74.000.
Silverberg, Morton; and Hamaker, Ralph A., 4,206,994, Cl. 355-3.0BE.
Xonics, Inc.: *See*—
Balser, Martin, 4,206,639, Cl. 73-189.000.
Yamada, Koichiro, to Hitachi, Ltd. Exhaust gas recirculation mechanism for an engine with a turbocharger. 4,206,606, Cl. 60-605.000.
Yamamoto, Heisuke: *See*—
Kawai, Noriaki; and Yamamoto, Heisuke, 4,206,729, Cl. 123-119.00A.
Yamamoto, Keizo; and Austin, Charles C., to Sharp Kabushiki Kaisha; and Hycom Incorporated. Touch sensitive switch arrangement with an I_2L structure. 4,207,479, Cl. 307-308.000.
Yamamoto, Yoichi, to Sharp Kabushiki Kaisha. Ink liquid issuance control in an ink jet system printer of the charge amplitude controlling type. 4,207,582, Cl. 346-140.00R.
Yamanaka, Akira: *See*—
Imura, Toshinori; and Yamanaka, Akira, 4,206,990, Cl. 354-195.000.
Yamashita, Hiroshi: *See*—
Fukuroi, Akio; Hayashi, Masanobu; Yamashita, Hiroshi; and Sugimoto, Isao, 4,206,619, Cl. 68-20.000.
Yamauchi, Akira. Sanitary footgear articles. 4,206,514, Cl. 2-239.000.
Yamauchi, Takafumi: *See*—
Haga, Hiroshi; Shigeoka, Ritsuo; and Yamauchi, Takafumi, 4,207,354, Cl. 426-574.000.
Yamazaki, Yasuo: *See*—
Miyamoto, Takayoshi; Egawa, Takeshi; and Yamazaki, Yasuo, 4,206,988, Cl. 354-152.000.
Yamschikov, Valery S.; Moor, Vladimir A.; Rekhtman, Valery I.; Belozerov, Viktor A.; Smirnov, Oleg P.; Karbachinsky, Vladimir M.; Nazarov, Igor A.; Pivovarov, Gleb N.; and Raev, Boris S. Liquid-stirring device and installation for treating loose materials. 4,207,007, Cl. 366-275.000.
Yan, Tsoung Y.: *See*—
Espenscheid, Wilton F.; and Yan, Tsoung Y., 4,207,117, Cl. 106-278.000.
Yanai, Saul: *See*—
Vofsi, David; Halmann, Martin M.; and Yanai, Saul, 4,207,417, Cl. 536-117.000.
Yapp, Robert: *See*—
Tosuntikool, Nam; and Yapp, Robert, 4,207,436, Cl. 179-16.0EA.
Yasuda, Shuhei; Ohba, Toshihiro; Suzuki, Chugi; Koba, Masayoshi; and Kudo, Jun, to Sharp Kabushiki Kaisha. Memory erase and memory read-out in an EL display panel controlled by an electron beam. 4,207,617, Cl. 365-111.000.
Yasumatsu, Jun: *See*—
Yoshitsugu, Noritada; Yasumatsu, Jun; Katsuno, Mitsuaki; and Tsujiuchi, Yoshio, 4,206,886, Cl. 242-107.200.
Yates, Robert W.: *See*—
Tyson, Donald R.; and Yates, Robert W., 4,206,966, Cl. 350-19.000.
Yeda Research & Development Co. Ltd.: *See*—
Vofsi, David; Halmann, Martin M.; and Yanai, Saul, 4,207,417, Cl. 536-117.000.
Yocum, Thomas A. Drone acoustical transducer. 4,206,832, Cl. 181-166.000.
Yokokoji, Shyoji: *See*—
Thukamoto, Sunao; and Yokokoji, Shyoji, 4,206,844, Cl. 206-439.000.
Yonemura, Utami: *See*—
Sobajima, Shigenobu; Chiba, Kiyoshi; Itoh, Kunio; Yonemura, Utami; and Mitani, Yuji, 4,206,615, Cl. 62-248.000.
York Luggage Corporation: *See*—
Shapiro, Harry G., 4,206,835, Cl. 190-60.000.
Yoshida Kogyo K.K.: *See*—
Fukuroi, Akio; Hayashi, Masanobu; Yamashita, Hiroshi; and Sugimoto, Isao, 4,206,619, Cl. 68-20.000.
Shimai, Hideo, 4,206,544, Cl. 29-770.000.
Yoshihama, Takashi: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.
Yoshino, Akira; and Iwami, Isamu, to Asahi-Dow Limited. Inorganic foam and preparation thereof. 4,207,113, Cl. 106-40.00R.
Yoshitsugu, Noritada; Yasumatsu, Jun; Katsuno, Mitsuaki; and Tsujiuchi, Yoshio, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai Rika Denki. Locking device for seatbelt systems. 4,206,886, Cl. 242-107.200.
Yost, Thomas D.: *See*—
Naimpally, Saiprasad V.; and Yost, Thomas D., 4,207,590, Cl. 358-28.000.
Young, Wendell M. Safety lift apparatus for portable grain elevators and the like. 4,206,839, Cl. 198-301.000.
Yoyama, Tadao: *See*—
Odawara, Masaru; Yoyama, Tadao; and Ohashi, Azusa, 4,207,106, Cl. 430-165.000.

Yu, Mason K.: *See*—
Kuziak, William R., Jr.; Razinsky, Elias H.; and Yu, Mason K., 4,206,596, Cl. 60-39.16R.
Yugari, Yasumi: *See*—
Fujii, Mitsuharu; Kuoka, Tatsuo; Setsuta, Tatsuo; Iwao, Yutaka; Yugari, Yasumi; Shiio, Tsuyoshi; Yoshihama, Takashi; and Hamuro, Junji, 4,207,312, Cl. 424-180.000.
Yukawa, Hideki, to Kokusan Denki Co., Ltd. Battery charger. 4,207,515, Cl. 320-59.000.
Zag, Heinrich: *See*—
Meinecke, Albrecht; and Zag, Heinrich, 4,207,144, Cl. 162-304.000.
Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Takeuchi, Tomio; Oki, Toshikazu; and Inui, Taiji, 4,207,313, Cl. 424-181.000.
Zangs, Ludger, to DEMAG, Aktiengesellschaft. Vessel for metal smelting furnace. 4,207,060, Cl. 432-77.000.
Zaromb, Solomon. Fluidized air-depolarized electrodes and related apparatus and methods. 4,207,382, Cl. 429-19.000.
Zatsepin, Nikolai N.; and Gusev, Alexandr P., to Otdel Fiziki Nerazrusha-Juschego Kontrolya Akademii Nauk Belorusskoi S.S.R. Method and apparatus for detecting defects in workpieces using a core-type magnet with magneto-sensitive detectors. 4,207,519, Cl. 324-235.000.
Zeimer, Ran. Pump without motoric drive. 4,207,034, Cl. 417-379.000.
Zenith Radio Corporation: *See*—
Srivastava, Gopal, 4,207,588, Cl. 358-26.000.
Zielinski, Gerald L.: *See*—
Hudak, Joseph M.; Zielinski, Gerald L.; and Messenger, Charles G., 4,207,460, Cl. 455-612.000.
Zorn, Bruno: *See*—
Traubel, Harro; Konig, Klaus; Muller, Hans J.; and Zorn, Bruno, 4,207,128, Cl. 156-77.000.
Zweegers, Petrus W. Mowing machine. 4,206,586, Cl. 56-295.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF JUNE, 1980

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Cornelius Company, The: *See*—
Zygiel, Alfred E., deceased, Re. 30,301, Cl. 137-564.500.

Eastman Kodak Company: *See*—
Weber, Wayne W., II; and Heseltine, Donald W., Re. 30,303, Cl. 430-512.000.

Eckart, Gregory C., to General Electric Company. Ground fault protection system. Re. 30,304, Cl. 361-44.000.

General Electric Company: *See*—
Eckart, Gregory C., Re. 30,304, Cl. 361-44.000.

Greenwood, Donald, to Ideal Toy Corporation. Gyroscope toy. Re. 30,299, Cl. 46-206.000.

Heseltine, Donald W.: *See*—
Weber, Wayne W., II; and Heseltine, Donald W., Re. 30,303, Cl. 430-512.000.

Ideal Toy Corporation: *See*—
Greenwood, Donald, Re. 30,299, Cl. 46-206.000.

Ploeger, Thomas L. Acoustical reflector for wind instruments. Re. 30,300, Cl. 84-400.000.

Stanislaw, Peter. Hot oil drum. Re. 30,302, Cl. 165-89.000.

Weber, Wayne W., II; and Heseltine, Donald W., to Eastman Kodak Company. Novel (UV absorbing compounds and) photographic elements containing UV absorbing compounds. Re. 30,303, Cl. 430-512.000.

Zygiel, Alfred E., deceased (by Zygiel, Mary E., executrix), to Cornelius Company, The. Beverage mixing and dispensing apparatus. Re. 30,301, Cl. 137-564.500.

Zygiel, Mary E., executrix: *See*—
Zygiel, Alfred E., deceased, Re. 30,301, Cl. 137-564.500.

LIST OF PLANT PATENTEES

Beineke, Walter F., to Purdue Research Foundation. Distinct variety of black walnut tree. 4,542, 6-10-80, Cl. 32.000.

Beineke, Walter F., to Purdue Research Foundation. Distinct variety of black walnut tree. 4,543, 6-10-80, Cl. 32.000.

Duffett, William E.: *See*—
Meek, Jack M.; and Duffett, William E., 4,544, Cl. 74.000.

Jackson & Perkins Co.: *See*—
Warriner, William A., 4,541, Cl. 19.000.

Meek, Jack M.; and Duffett, William E., to Yoder Brothers, Inc. Chrysanthemum plant cultivar name: Stripes. 4,544, 6-10-80, Cl. 74.000.

Purdue Research Foundation: *See*—
Beineke, Walter F., 4,542, Cl. 32.000.
Beineke, Walter F., 4,543, Cl. 32.000.

Slaton, Richard I.: *See*—
Stone, Felix; and Slaton, Richard I. 4,545, Cl. 88.000.

Stone, Felix; and Slaton, Richard I. Spathiphyllum named Burtoni. 4,545, 6-10-80, Cl. 88.000.

Warriner, William A., to Jackson & Perkins Co. Rose plant. 4,541, 6-10-80, Cl. 19.000.

Yoder Brothers, Inc.: *See*—
Meek, Jack M.; and Duffett, William E., 4,544, Cl. 74.000.

LIST OF DESIGN PATENTEES

Addicott, Martin G. Tree sculpture or the like. 255,338, 6-10-80, Cl. D11-118.000.

Aiba, Nobushiro: *See*—
Karaki, Sadayoshi; and Aiba, Nobushiro, 255,366, Cl. D17-8.000.

Airwick Industries, Inc.: *See*—
Hoyt, Earl, 255,325, Cl. D9-83.000.

Anderson, Kirk D. Confection. 255,280, 6-10-80, Cl. D1-18.000.

Angenieux-CLB S.A.: *See*—
Lauzier, Rene, 255,346, Cl. D12-179.000.

Astec Industries, Inc.: *See*—
Mize, Erbie G.; and Riske, Irwin M., 255,355, Cl. D15-19.000.

Bakkeren, Hans A. Ultrasonic welding head for polypropylene strapping. 255,318, 6-10-80, Cl. D8-30.000.

Balda-Werke Photographische Gerate und Kunststoff GmbH & Co. KG: *See*—
Lange, Karl H., 255,364, Cl. D16-59.000.

Bartlett, Robert N. Floor cleaning apparatus. 255,358, 6-10-80, Cl. D15-54.000.

Bartlett, Robert N. Combination floor cleaning apparatus wand and floor tool. 255,359, 6-10-80, Cl. D15-63.000.

Battista, Vincent: *See*—
Newsom, Hamilton S., Jr.; and Battista, Vincent, 255,302, Cl. D6-157.000.
Newsom, Hamilton S., Jr.; and Battista, Vincent, 255,303, Cl. D6-157.000.
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CLASSIFICATION OF PATENTS

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69.5 4,206,512
152 R 4,206,513
239 4,206,514
241 4,206,515

CLASS 3

1.9 4,206,516
1.91 4,206,517
13 4,206,518
27 4,206,519

CLASS 4

505 4,206,521
512 4,206,522
562 4,206,523
665 4,206,520

CLASS 5

468 4,206,524
507 4,206,525

CLASS 8

111 4,207,070
115.6 4,207,071
137 4,207,072
187 4,207,073
470 4,207,067
471 4,207,069
493 4,207,068

CLASS 15

40 4,206,526
102 4,206,527
256.51 4,206,528
264 4,206,529
340 4,206,530
341 4,206,531

CLASS 16

191 4,206,532

CLASS 23

230 B 4,207,075
230 R 4,207,074

CLASS 24

230 AK 4,206,533

CLASS 29

25.13 4,206,534
90 B 4,206,535
402.11 4,206,536
447 4,206,537
450 4,206,538
566.3 4,206,539
590 4,206,540
611 4,206,541
739 4,206,543
770 4,206,544
877 4,206,542

CLASS 33

174 E 4,206,548
200 4,206,549
286 4,206,550
434 4,206,551

CLASS 34

23 4,206,552
28 4,206,553
34 4,206,554
57 R 4,206,555
90 4,206,556

CLASS 35

9 B 4,206,557

CLASS 36

7.5 4,206,558

CLASS 40

361 4,206,559

CLASS 42

68 4,206,560

CLASS 43

53.5 4,206,561
102 4,206,562

CLASS 44

56 4,207,076
4,207,077
68 4,207,078
71 4,207,079

CLASS 46

1 E 4,206,563
22 4,206,564
41 4,206,565
47 4,206,566
116 4,206,567
153 4,206,568
206 Re.30,299

CLASS 47

1.7 4,206,569
71 4,206,570

CLASS 48

210 4,207,081

CLASS 49

340 4,206,571

CLASS 51

34 H 4,206,572
164.1 4,206,573
363 4,206,574

CLASS 52

3 4,206,575
291 4,206,576
405 4,206,577
730 4,206,578

CLASS 53

484 4,206,579

CLASS 55

60 4,207,082
129 4,207,083
181 4,207,084
276 4,207,085

CLASS 56

10.4 4,206,580
14.6 4,206,581
15.8 4,206,582
4,206,583
4,206,584
235 4,206,585
295 4,206,586
341 4,206,587

CLASS 57

80 4,206,588
293 4,206,589

CLASS 60

39.04 4,206,593
39.09 F 4,206,595
39.16 R 4,206,596
226 R 4,206,597
258 4,206,594
282 4,206,598
285 4,206,599
312 4,206,600
398 4,206,601
433 4,206,602
477 4,206,603
518 4,206,604
545 4,206,605
605 4,206,606
611 4,206,607
698 4,206,608

CLASS 62

6 4,206,609
55 4,206,610
85 4,206,611
128 4,206,612
133 4,206,613
233 4,206,614
248 4,206,615
406 4,206,616

CLASS 64

13 4,206,617

CLASS 65

1 4,207,086

CLASS 68

3SS 4,206,618
20 4,206,619

CLASS 71

88 4,207,088
90 4,207,089
4,207,090
113 4,207,091

CLASS 72

8 4,206,620
95 4,206,622
108 4,206,623
130 4,206,621
131 4,206,624
181 4,206,625
265 4,206,626
334 4,206,627
354 4,206,628
389 4,206,629

CLASS 73

1 G 4,206,630
40 4,206,631
40.5 R 4,206,632
105 4,206,633
119 A 4,206,634
4,206,635
132 4,206,636
187 4,206,637
189 4,206,638
4,206,639
194 EM 4,206,640
4,206,641
194 VS 4,206,642
206 4,206,643
349 4,206,645
362 AR 4,206,647
4,206,648
4,206,649
362 SC 4,206,646
421 R 4,206,650
425.4 R 4,206,651
4,206,652
602 4,206,653
620 4,206,654
708 4,206,655

CLASS 74

6 4,206,656
50 4,206,657
128 4,206,658
230.17 E 4,206,659
393 4,206,660
606 R 4,206,661
710.5 4,206,662

CLASS 75

0.5 AA 4,207,092
26 4,207,093
60 4,207,094
134 N 4,207,095
153 4,207,096
166 D 4,207,097
171 4,207,098
251 4,207,099

CLASS 81

311 4,206,663

CLASS 82

4 C 4,206,664
36 R 4,206,665

CLASS 83

63 4,206,666
146 4,206,667
171 4,206,668
212.1 4,206,669
404.2 4,206,670
408 4,206,671
415 4,206,672
731 4,206,673

CLASS 84

1.01 4,206,674
1.03 4,206,675
4,206,676
107 4,206,677
267 4,206,678
314 N 4,206,679
382 4,206,680
400 Re.30,300
411 R 4,206,681
484 4,206,682

CLASS 89

28 A 4,206,683

CLASS 91

173 4,206,684
356 4,206,685
386 4,206,686
395 4,206,687
452 4,206,688
516 4,206,689

CLASS 92

187 4,206,690

CLASS 93

49 R 4,206,691

CLASS 98

59 4,206,693
122 4,206,692

CLASS 99

295 4,206,694
323.9 4,206,695
457 4,206,696
489 4,206,697

CLASS 100

17 4,206,698
53 4,206,699
162 B 4,206,700
257 4,206,701

CLASS 101

291 4,206,702
4,206,703
4,206,704

CLASS 102

23 4,206,705
27 R 4,206,706
46 4,206,707

CLASS 104

172 B 4,206,708

CLASS 105

243 4,206,709
420 4,206,710

CLASS 106

40 R 4,207,113
4,207,114
95 4,207,115
97 4,207,116
278 4,207,117

CLASS 110

238 4,206,711
264 4,206,712
347 4,206,713

CLASS 111

92 4,206,714

CLASS 113

116 F 4,206,715

CLASS 114

102 4,206,716
230 4,206,717

CLASS 119

1 4,206,718
5 4,206,719
17 4,206,720
103 4,206,721

CLASS 122

1 A 4,206,722
22 4,206,723

CLASS 123

32 AE 4,206,724
32 R 4,206,725
41.35 4,206,726
66 4,206,727
90.12 4,206,728
119 A 4,206,729
4,206,730
4,206,731
122 D 4,206,732
133 4,206,733
139 AP 4,206,734
139 AW 4,206,735
148 E 4,206,736
4,206,737
196 R 4,206,739

CLASS 124

25 4,206,740

CLASS 126

25 A 4,206,741
66 4,206,742
110 B 4,206,743
121 4,206,744
271.1 4,206,745
438 4,206,746
4,206,747
444 4,206,748

CLASS 127

24 4,207,118

CLASS 128

1 R 4,206,749
17 4,206,750
24 R 4,206,751
79 4,206,752
201.21 4,206,753
203.15 4,206,758
204.21 4,206,754
214 E 4,206,755
229 4,206,756
260 4,206,757
303.1 4,206,759
4,206,760
660 4,206,761
4,206,762
4,206,763
677 4,206,764
4,206,765
738 4,206,766
762 4,206,767
763 4,206,768
774 4,206,769

CLASS 131

247 4,206,770

CLASS 132

11 R 4,206,771
43 R 4,206,772
45 R 4,206,773
92 R 4,206,774

CLASS 133

3 R 4,206,775

CLASS 136

89 TF 4,207,119

CLASS 137

45 4,206,776
218 4,206,777
315 4,206,778
360 4,206,779
387 4,206,780
504 4,206,781
564.5 Re.30,301
615 4,206,782
810 4,206,783

CLASS 138

92 4,206,784
149 4,206,785
178 4,206,786

CLASS 139

383 A 4,206,787

CLASS 141

1 4,206,788
39 4,206,789
250 4,206,790
392 4,206,791
4,206,792

CLASS 144

325 4,206,793

CLASS 145

75 4,206,794

CLASS 148

16.5 4,207,120
26 4,207,121
33.4 4,207,122
113 4,207,123

CLASS 149

92 4,207,124
109.4 4,207,125
109.6 4,207,126

CLASS 150

52 R 4,206,795

CLASS 152

347 4,206,796
353 R 4,206,797

CLASS 156

50 4,207,127
77 4,207,128
242 4,207,129
244.13 4,207,130
384 4,207,131
4,207,132
415 4,207,133
423 4,207,134
502 4,207,135
515 4,207,136
627 4,207,137
642 4,207,138

CLASS 157

13 4,206,798

CLASS 162

23 4,207,139
4,207,140
49 4,207,141
158 4,207,142
207 4,207,143
304 4,207,144

CLASS 164

341 4,206,799
401 4,206,800
4,206,801

CLASS 165

1 4,206,802
9 4,206,803
40 4,206,804
80 C 4,206,805
82 4,206,806
89 Re.30,302
105 4,206,807
148 4,206,738

CLASS 166

241 4,206,808
252 4,206,809
336 4,206,810

CLASS 168

4 4,206,811

CLASS 171

63 4,206,812

CLASS 172

7 4,206,813
44 4,206,814
311 4,206,815
4,206,816
559 4,206,817
781 4,206,818
801 4,206,819

CLASS 173

105 4,206,820

CLASS 174

26 R 4,207,427
70 S 4,207,428
88 R 4,207,429

CLASS 175

321 4,206,821

CLASS 177

25 4,206,822
121 4,206,823

CLASS 179

1 F 4,207,430
1 GD 4,207,432
1 MN 4,207,431
16 EA 4,207,436
18 ES 4,207,437
18 G 4,207,438
99 LC 4,207,439
100.1 VC 4,207,440

107 R 4,207,441
111 E 4,207,442

CLASS 180

65 R 4,206,824
77 S 4,206,825
77 TC 4,206,826
132 4,206,827
184 4,206,828
290 4,206,829

CLASS 181

141 4,206,830
159 4,206,831
166 4,206,832

CLASS 182

2 4,206,833

CLASS 188

341 4,206,834

CLASS 190

60 4,206,835

CLASS 192

7 4,206,836
90 4,206,837

CLASS 194

4 F 4,206,838

CLASS 198

301 4,206,839
4,206,840
670 4,206,841

CLASS 200

5 A 4,207,443
4,207,444
11 TC 4,207,445
148 B 4,207,446
148 R 4,207,447
159 B 4,207,448
308 4,207,449

CLASS 201

41 4,207,145

CLASS 204

1 T 4,207,146
12 4,207,147
43 S 4,207,148
46 G 4,207,149
55 R 4,207,150
73 R 4,207,151
98 4,207,152
106 4,207,153
157.1 S 4,207,154
159.23 4,207,155
159.24 4,207,156
180 P 4,207,157
180 R 4,207,158
195 P 4,207,160
4,207,161
195 R 4,207,162
195 S 4,207,159
253 4,207,163
4,207,164
258 4,207,165
299 R 4,207,166

CLASS 206

45.19 4,206,842
216 4,206,843
439 4,206,844
508 4,206,845
597 4,206,846

CLASS 208

68 4,207,167
86 4,207,168
124 4,207,169
139 4,207,170
4,207,171
4,207,172
207 4,207,173
226 4,207,174

CLASS 209

3.3 4,207,175
44 4,207,176
44.2 4,207,177
166 4,207,178

CLASS 210

7 4,207,179
4,207,180
23 F 4,207,182
23 H 4,207,183
37 R 4,207,184
44 4,207,185
54 4,207,186
111 4,207,181
130 4,207,187
198 C 4,207,188
227 4,207,189
232 4,207,190
242 S 4,207,191
321 R 4,207,192

CLASS 211

1.3 4,206,847

CLASS 212

4 4,206,848

CLASS 213

151 4,206,849
175 4,206,850

CLASS 215

246 4,206,851
252 4,206,852

CLASS 219

10.55 A 4,207,452
10.79 4,207,451
61.11 4,207,453
73.1 4,207,454
265 4,207,455
345 4,207,456
381 4,207,457
384 4,207,458

CLASS 220

94 R 4,206,853

CLASS 222

478 4,206,854
482 4,206,855
564 4,206,856
625 4,206,857

CLASS 225

96 4,206,858

CLASS 226

74 4,206,859
97 4,206,860
134 4,206,861
178 4,206,862

CLASS 227

83 4,206,863

CLASS 228

20 4,206,864
152 4,206,865
172 4,206,866

CLASS 229

17 G 4,206,867
33 4,206,868
34 R 4,206,869
62.5 4,206,870

CLASS 233

19 R 4,206,871

CLASS 236

34.5 4,206,873
46 R 4,206,872

CLASS 237

8 C 4,206,874
55 4,206,875

CLASS 239

455 4,206,876
524 4,206,877

CLASS 241

20 4,206,878
46.11 4,206,879
98 4,206,880
207 4,206,881
221 4,206,882

CLASS 242

18 G 4,206,883
4,206,884
55 4,206,885
107.2 4,206,886
107.4 A 4,206,887
107.7 4,206,888
128 4,206,889
184 4,206,890

CLASS 244

17.13 4,206,891
45 A 4,206,892
54 4,206,893
114 R 4,206,894
123 4,206,895

CLASS 248

310 4,206,896
505 4,206,897
561 4,206,898

CLASS 249

139 4,206,899

CLASS 250

201 4,207,461
202 4,207,462
231 P 4,206,644
231 SE 4,207,463
239 4,207,464
288 4,207,465
338 4,207,466
4,207,467
341 4,207,468
343 4,207,450
4,207,469
358 T 4,207,470
377 4,207,471
563 4,207,472
570 4,207,473

CLASS 251

14 4,206,900
35 4,206,901
57 4,206,902
174 4,206,903
315 4,206,904
328 4,206,905

CLASS 252

8.55 B 4,207,193
4,207,194
46.6 4,207,195
47.5 4,207,196
99 4,207,197
117 4,207,198
174.13 4,207,199
184 4,207,200
191 4,207,201
359 E 4,207,202
408 4,207,203
411 R 4,207,204
429 B 4,207,205
4,207,206
4,207,207
431 R 4,207,208
455 Z 4,207,209
462 4,207,210
463 4,207,211
466 J 4,207,212
468 4,207,213
474 4,207,214
522 R 4,207,215
542

CLASS 254

89 H 4,206,906

CLASS 260

5 4,207,216
18 N 4,207,217
23.7 M 4,207,218
25 4,207,219
27 R 4,207,220
28.5 R 4,207,221
29.3 4,207,222
29.6 WB 4,207,223
30.6 R 4,207,224
4,207,225
38 4,207,226
40 TN 4,207,227
45.8 N 4,207,228
45.8 NT 4,207,229
45.95 R 4,207,230
104 4,207,231
158 4,207,233
239 A 4,207,234
239.55 R 4,207,235
326.2 4,207,237
326.25 4,207,238
340.9 AS 4,207,240
345.7 R 4,207,241
347.4 4,207,242
347.5 4,207,243
397.25 4,207,244
429.5 4,207,245
449.6 M 4,207,249
449.6 R 4,207,248
4,207,250
453 P 4,207,251
455 R 4,207,252
465 D 4,207,253
508 4,207,254
546 4,207,255
555 A 4,207,256
558 R 4,207,257
559 AT 4,207,258
561 K 4,207,259
577 4,207,260
580 4,207,261
582 4,207,262
583 R 4,207,263
651 F 4,207,266
656 R 4,207,267
659 R 4,207,268
927 R 4,207,270
953 4,207,271
967 4,207,272

CLASS 261

23 A 4,207,273
50 A 4,207,274
93 4,207,275
114 A 4,207,276
130 4,207,277

CLASS 264

46.4 4,207,278
54 4,207,279
153 4,207,280
176 R 4,207,281
257 4,207,282
322 4,207,283
516 4,207,284

CLASS 267

8 R 4,206,907
4,206,908

CLASS 269

47 4,206,909
236 4,206,910
296 4,206,911

CLASS 271

154 4,206,912

CLASS 272

27 B 4,206,913
73 4,206,914

CLASS 273

1 E 4,207,087
1.5 A 4,206,915
29 A 4,206,916
73 E 4,206,917
138 A 4,206,920
142 D 4,206,921
157 R 4,206,922
160 4,206,923
169 4,206,924
248 4,206,925
326 4,206,918
364 4,206,919

CLASS 274

9 B 4,206,926

CLASS 277

12 4,206,927
15 4,206,928
34 4,206,929
165 4,206,930
166 4,206,931

CLASS 279

1 D 4,206,932

CLASS 280

18 4,206,933
711 4,206,934
723 4,206,935
751 4,206,936

CLASS 282

27.5 4,206,937

CLASS 285

2 4,206,938

CLASS 292

263 4,206,939

CLASS 294

82 R 4,206,940
87.26 4,206,941

CLASS 296

1 S 4,206,942
26 4,206,943
76 4,206,944

CLASS 297

220 4,206,945
379 4,206,946

CLASS 299

10 4,206,947

CLASS 300

21 4,206,948

CLASS 303

38 4,206,949
110 4,206,950

CLASS 307

40 4,207,474
52 4,207,475
216 4,207,476
221 D 4,207,477
240 4,207,478
308 4,207,479
4,207,480
310 4,207,481

CLASS 308

6 C 4,206,951
8.2 4,206,952
9 4,206,953

CLASS 310

45 4,207,482
49 R 4,207,483
91 4,207,484
104 4,207,485
178 4,207,486
268 4,207,487

CLASS 312

71 4,206,954
107 4,206,955
257 SK 4,206,956

CLASS 313

221 4,207,488
363 4,207,489
403 4,207,490
412 4,207,491

CLASS 315

3 4,207,492
4,207,493
5.35 4,207,494
39.3 4,207,495
39.53 4,207,496
96 4,207,497
97 4,207,498
111.1 4,207,499
119 4,207,500
159 4,207,501

CLASS 318

16 4,207,502
139 4,207,503
561 4,207,504
595 4,207,505
620 4,207,506
665 4,207,507
742 4,207,508
798 4,207,509
802 4,207,510

CLASS 320

6 4,207,511
17 4,207,512
23 4,207,513
44 4,207,514
59 4,207,515

CLASS 323

9 4,207,516

CLASS 324

51 4,207,517
95 4,207,518
235 4,207,519
238 4,207,520

CLASS 328

145 4,207,533
147 4,207,534

CLASS 329

118 4,207,535

CLASS 330

69 4,207,536
253 4,207,537
277 4,207,538

CLASS 331

1 A 4,207,539
94.5 G 4,207,542
94.5 P 4,207,541
94.5 PE 4,207,540

CLASS 333

17 R 4,207,543
24 R 4,207,544
150 4,207,545
152 4,207,546
209 4,207,547
225 4,207,548

CLASS 334

1 4,207,549

CLASS 336

60 4,207,550

CLASS 338

4 4,207,551
322 4,207,552

CLASS 339

40 4,206,957
49 R 4,206,958
59 R 4,206,959
61 R 4,206,960
75 P 4,206,961
147 R 4,206,962
4,206,963
221 M 4,206,964

CLASS 340

73 4,207,553
146.3 CA 4,207,554
147 MD 4,207,555
166 R 4,207,556
178 4,207,557
524 4,207,558
531 4,207,559
552 4,207,560
600 4,207,561
602 4,207,562
626 4,207,563
4,207,564
4,207,565
664 4,207,566
680 4,207,567
852 4,207,568

CLASS 343

6.5 R 4,207,569
106 R 4,207,570
112 R 4,207,571
113 R 4,207,572
727 4,207,573
752 4,207,574
874 4,207,575
885 4,207,576

CLASS 346

1.1 4,207,577
75 4,207,578
4,207,579
136 4,207,580
139 R 4,207,581
140 R 4,207,582

CLASS 350

3.76 4,206,965
19 4,206,966
96.33 4,206,967
4,206,968
126 4,206,969
175 E 4,206,970
183 4,206,971
214 4,206,972
4,206,973
215 4,206,974
4,206,975
218 4,206,976
220 4,206,977
252 4,206,978
342 4,206,979
359 4,206,980

CLASS 352

14 4,206,981
140 4,206,982
243 4,206,983

CLASS 353

61 4,206,984
68 4,206,985

CLASS 354

1 4,206,986
44 4,206,987
152 4,206,988
182 4,206,989
195 4,206,990
225 4,206,991
235 4,206,992
323 4,206,993

CLASS 355

3 BE 4,206,994
14 C 4,206,995
4,206,996
39 4,206,997
77 4,206,998

CLASS 356

28 4,206,999
33 4,207,000
335 4,207,001
375 4,207,002
382 4,207,003

CLASS 357

38 4,207,583
4,207,584
41 4,207,585
52 4,207,586
74 4,207,587

CLASS 358

26 4,207,588
28 4,207,589
4,207,590
34 4,207,591
4,207,592
106 4,207,593
107 4,207,594
111 4,207,595
182 4,207,596
195.1 4,207,597
257 4,207,598
261 4,207,599

CLASS 360

71 4,207,600
78 4,207,601

CLASS 361

24 4,207,602
44 Re.30,304
56 4,207,603

283 4,207,604

CLASS 362

106 4,207,606
282 4,207,607
410 4,207,608

CLASS 364

200 4,207,609
580 4,207,610
4,207,611
900 4,207,612

CLASS 365

27 4,207,613
32 4,207,614
95 4,207,615
111 4,207,617
189 4,207,616
222 4,207,618

CLASS 366

97 4,207,004
108 4,207,005
220 4,207,006
275 4,207,007
309 4,207,008
337 4,207,009

CLASS 367

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DESIGN PATENTS

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8 : 255,358
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13 : 255,334
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17 : 255,297
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PLANT PATENTS

6 : 4,541
06 : 4,544
12 : 4,545
18 : 4,542
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